

**HOW TO MAKE THE BEST USE OF PUBLIC FUNDS
IN PROMOTING LOCALLY GROWN PRODUCTS: ASSESSMENT OF THE
POTENTIAL IMPACT OF A PROMOTION CAMPAIGN
FY 2009**

Most state departments of agriculture promote local agricultural products, but studies of the effectiveness of such efforts have been limited and typically measure impact long after campaign investment decisions are made. Another limitation of previous studies is the focus on benefits to farmers without consideration of the impact on other potential beneficiaries such as consumers, local restaurants and farmers markets. For consumers this issue has special significance because the main funding source for many state agricultural promotion campaigns is state tax revenues. Clemson researchers examined several aspects of state-based local food promotion and in the course of this unique project:

- 1) Developed a framework that can be used at the initial stages of the campaign for assessing the overall potential economic impact of a promotion campaign on producer surplus;
- 2) Analyzed the impact of government sponsored advertising on consumer welfare;
- 3) Assessed the relative value of the components of the South Carolina Department of Agriculture's locally grown campaign--labels and signage for "Certified South Carolina Grown" products; television, radio, magazine, newspaper and billboard advertisements; and the "Fresh on the Menu" promotion to local restaurants; and
- 4) Developed a model of the South Carolina economy to estimate the economic impact of the campaign on farmers markets, restaurants, and consumers, and the state's economy.

Results showed that the South Carolina locally grown campaign yielded an estimated \$22 million/year increase in producer welfare, \$68 million/year increase in consumer welfare, \$14.518 million in total industry output, \$4.731 million in earned income, \$7.557 million in gross state product, and 192.9 full-time equivalent jobs due to its impact on farmers markets and restaurants.

**FINAL REPORT SUMMARY
FINAL REPORT**

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Summary, Conclusions and Implications

The rise in consumer interest in local foods has been accompanied by increased participation of state departments of agriculture in promoting these products. While numerous promotion campaigns have been supported by various states, efforts evaluating their effectiveness have been limited and the results variable. Furthermore, campaign effectiveness has been typically measured ex-post, long after campaign investment decisions have been made. Many of these investment decisions could have been more efficient if the information about the potential impact of the campaign and its components was taken into account. The issue of efficient fund allocation becomes particularly important in the environment of decreasing state and federal funding. In this environment it becomes increasingly important to have a framework that will allow to measure and discern the overall impact of a campaign and its various components on the local economy and various economic agents. The goal of this project was to provide such a framework.

We started by developing a framework for assessing the overall potential economic impact of a regional promotion campaign on producer surplus that can be used at the initial stages of the campaign. The proposed approach was based on the combination of contingent valuation methods with a partial displacement equilibrium model. Contingent valuation methods were used to measure changes in consumer willingness to pay for locally grown products at the initial stages of campaign implementation when sales data necessary to directly measure the shift in demand are not yet available. This measure of advertising impact was then used in a partial displacement equilibrium model to estimate the change in producer surplus due to the campaign. The main benefit of the proposed approach is the ability to provide an impact assessment at the initial stages of campaign development. Our findings have already been published in the *Journal of Agricultural and Resource Economics* and our models have been shared with other colleagues around the country that are charged with conducting similar analyses in their States (e.g., Hu, Onozaka, and Thilmany, 2011; Collart, Palma, and Carpio, 2011).

Another limitation of previous studies evaluating the effectiveness and impact of regional agricultural campaigns is their exclusive focus on the benefits received by farmers. Other potential campaign beneficiaries such as consumers, local restaurants and farmers markets have been largely ignored in the previous literature. In the case of consumers this issue is very important since regional agricultural promotion campaigns are mainly funded using state tax revenues. Hence, the objective of the second part of this project was to analyze the impact of government sponsored advertising on consumer welfare. Our theoretical analysis indicates that the overall welfare (i.e., economic) impact of government sponsored advertising on consumers and the society depends upon the characterization of advertising as informative or complementary. If government sponsored advertising is purely informative, it results in a simple welfare transfer mechanism from consumers to producers without additional net benefits to society. However, if the promotion campaign is complementary in nature, it can increase consumer and total social welfare. We developed an empirical approach for establishing whether advertising is informative or complementary using contingent valuation procedures. The proposed framework was applied to the estimation of the consumer welfare impact of the South Carolina locally grown campaign using alternative campaign financing vehicles (a new tax versus the reallocation of current taxes). Our findings suggest that the South Carolina campaign

is complementary in nature and increases consumer welfare by \$68 million per year. In combination with the increase in producer welfare that was estimated to be \$22 million per year in the first part of this study, we estimated the total impact of the campaign at about \$88 million per year. We also found that the campaign is more likely to be supported if the funding came from existing rather than new taxes. This second part of the study allows for a more comprehensive analysis of the campaign impact while retaining the ability to provide impact analysis at the initial stages of campaign development. These findings can be used by the South Carolina Department of Agriculture to demonstrate the effectiveness and the return on investment for the campaign to the local legislators as they are trying to secure additional funding and support. The framework is general enough to be used for evaluation of various types of government sponsored advertising campaigns.

The next issue that was tackled in this study was the relative value of various campaign components. The components of the South Carolina Locally grown campaign include the design and distribution of labels and signage for “Certified South Carolina Grown” products; the advertisement of South Carolina food products on television, radio, magazines, newspapers and billboards; and the “Fresh on the Menu” component focusing on advertising at local restaurants. Most of the campaign expenditures (>70%) are devoted to multimedia advertising. Is this the most efficient allocation of funding? Based on stated-preference choice experiments we developed a framework for the evaluation of the economic value of separate campaign components and applied it to a generally overlooked segment of local restaurants. We found that the participating restaurants would be willing to pay on average \$125.22, \$195.23, and \$212.53 per year for having Labeling, Multimedia Advertising, and “Fresh on the Menu” components, respectively. We also found that restaurants would prefer to participate in the *Certified SC Grown* campaign by donating annually rather than paying a membership fee. These results suggest that participating restaurants would be willing to donate on average of \$532.98 annually to support a campaign that includes all these components (consistent with the current design of the campaign). The framework and survey instruments developed in this study can be applied to a broader sample of population in order to draw more general conclusions. This framework provides a tool for selecting the best and most efficient methods of promotion and marketing agricultural products for existing and new locally grown promotion campaigns.

Finally, we took a more general look at the campaign and its direct and indirect contribution to the state economy. We developed and IMPLAN-based SAM model of the South Carolina economy to estimate the economic impact of the campaign due to perceived changes in sales and profitability and applied it to the generally overlooked segments of farmers markets and restaurants. The data for perceived changes in sales and profitability was generated from surveys of farmers markets and restaurants. We also asked consumers about where they would spend if they had not spent at farmers markets to take into account the opportunity costs and estimate the net as opposed to gross impact of the campaign on the state economy. We estimated that the gross impact of the program as transmitted through farmers’ markets and restaurants was \$14.518 million in total industry output, \$4.731 million in earned income, \$7.557 million in gross state product, and 192.9 full-time equivalent jobs. This methodology can be applied to the data from additional marketing channels combined with information from consumers regarding the opportunity costs of spending via these marketing channels to provide a more general estimate of the economic impact of the campaign.

Overall, as the result of this project, we estimated that the South Carolina locally grown campaign yielded a \$22 million per year increase in producer welfare, \$68 million per year increase in consumer welfare, along with \$14.518 million in total industry output, \$4.731 million in earned income, \$7.557 million in gross state product, and 192.9 full-time equivalent jobs due to its impact on farmer's markets and restaurants. To the best of our knowledge, this is the most comprehensive study of a locally grown program that has been conducted to date. The tools and methods developed in this study are readily available for continued evaluation of this and other government sponsored promotion campaigns. We believe that the taxpayers will be the ultimate beneficiaries of this research as more informed and efficient government sponsored promotion campaign investments are made.

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Final Report

to

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Agricultural Marketing Service

USDA

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Executive Summary

The primary goal of this project was to develop an approach for measuring the potential economic impact of a locally grown promotion campaign that can be used at the initial stages of campaign implementation. A secondary goal was to develop a decision-making framework for evaluating alternative marketing channels of promoting locally grown products including estimating their impact on local economies.

The first stage of this project focused on developing a framework for assessing the potential economic impact of a regional promotion campaign on producer surplus. The proposed approach was based on the combination of contingent valuation methods with a partial displacement equilibrium model. The contingent valuation approach was used to measure changes in consumer willingness to pay for locally grown products at the initial stages of campaign implementation when sales data necessary to directly measure the shift in demand are not yet available. This measure of advertising impact was then used in a partial displacement equilibrium model to estimate the change in producer surplus due to the campaign.

The second stage of this project was devoted to developing a framework to quantify the potential impact of a regional promotion campaign on consumers' welfare in a perfectly competitive market. The theoretical analysis revealed that the effect of government sponsored advertising depends on its conceptual characterization as informative or complementary. Government sponsored advertising that is purely informative is shown to be a welfare transfer mechanism from consumers to producers, while complementary advertising can increase total social welfare. We developed an empirical approach for establishing whether advertising is informative or complementary in nature using contingent valuation procedures and applied it to the estimation of the consumer welfare impact of the South Carolina locally grown campaign using alternative campaign financing vehicles (a new tax versus the reallocation of current taxes).

The third stage of this project concentrated on the relative value of separate components of the *Certified SC Grown* campaign. Based on stated-preference choice experiments we developed a framework for evaluation of the economic value of separate campaign components and applied it to a generally overlooked segment of local restaurants.

The fourth stage of the project examined direct and indirect economic impacts of the *Certified SC Grown* Campaign on the South Carolina economy. We developed an IMPLAN-based SAM model of the South Carolina economy to estimate the economic impact of the campaign due to perceived changes in sales and profitability and applied it to the generally overlooked segments of farmers markets and restaurants.

Overall, as the result of this project, we estimated that the South Carolina locally grown campaign yielded a \$22 million per year increase in producer welfare, \$68 million per year increase in consumer welfare, along with \$14.518 million in total industry output, \$4.731 million in earned income, \$7.557 million in gross state product, and 192.9 full-time equivalent jobs due to its impact on farmer's markets and restaurants.

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Introduction and Overview

In the United States, regional promotion programs have seen a substantial growth since the mid 1990s. In fact, the number of states conducting such programs doubled between 1995 and 2006 (Patterson, 2006) and by 2010 these programs were in place in all 50 states (Onken and Bernard, 2010). A large portion of this increase resulted from the Community Food Security Act (part of the Nutrition Title of the Federal Agriculture Improvement and Reform Act of 1996, P.L. 104-127), which generated \$22 million of support for 166 local food system initiatives from 1996 to 2003 (Tauber and Fisher, 2002). The continued support for regional products has been expressed in The Food, Conservation and Energy Act of 2008 (P.L. 110-246) which directs the Secretary of Agriculture to encourage institutions, such as schools, to purchase unprocessed agricultural products, both locally grown and locally raised, to the maximum extent practicable and appropriate. Another significant source of funding for regional promotion campaigns in the U.S. is state governments, which provide specific appropriations for such programs.

While multiple promotion campaigns have been funded by various states in the U.S., little is known about their effectiveness. For example, a study on the *Arizona Grown* campaign mounted during the winter of 1999 provided little evidence of the program increasing product sales (Patterson et al., 1999). On the other hand, Govindasamy et al. (2003) argue that *the Jersey Fresh* program provided about \$32 in return for fruit and vegetable growers for every dollar invested in the campaign. This result suggests that the \$1.16 million campaign in 2000 generated \$36.6 million in sales for New Jersey produce growers. The total impact of the Jersey Fresh program in the total economic activity of the State of New Jersey was estimated at \$63.2 million. Given mixed results from the previous campaigns, starting a new one is always a risky business.

As policymakers seek initial and continued funding for regional promotion campaigns, they are often asked to provide information on potential returns on investment for the campaign. However, the scientific literature provides little information on this issue. Moreover, as funding support becomes more scarce, officials must make tough choices concerning which aspects of such campaigns to discontinue. In this environment, it is increasingly important to have a framework for measuring which projects are likely to have the biggest impact on the local economy. Information and guidance is also lacking regarding how to evaluate a campaign impact at the early stages of its implementation. Previous studies concerning the effectiveness of agricultural promotion campaigns have been conducted after the programs have been in-place for several years (e.g., Govindasamy et al., 2003).

Since many agricultural promotion campaigns have been funded by check-off dollars they have usually been evaluated from the perspective of farmers as opposed to society in general (e.g., Kaiser et al, 2005). But state-supported locally grown campaigns are funded by general tax revenues meaning evaluations should also consider benefits to local consumers. The scientific literature examining benefits to consumers of such campaigns is much more limited (Alston, Chalfant and Piggot, 2000; Cardon and Pope, 2003). Furthermore, we are unaware of any study evaluating “state grown” promotion programs from the viewpoint of producers and consumers.

The *primary goal* of this project was to develop an approach for measuring the potential economic impact of a locally grown promotion campaign that can be used at the initial stages of campaign implementation. A secondary goal was to develop a decision-making framework for evaluating alternative marketing channels of promoting locally grown products including a way of estimating their impacts on local economies. We examined the South Carolina locally grown

promotion campaign as a test case for evaluating the component parts of a promotional campaign as well as its overall effectiveness and benefits to various groups in society.

The *South Carolina locally grown campaign* was launched on May 22, 2007 and has been financed by special appropriations from the state legislature from 2007 to 2010 with average annual expenditures of \$1.3 million. The goal of the South Carolina “buy local” campaign is to increase consumer demand for the state produced food products (<http://www.certifiedscgrown.com>). Campaign activities include the design and distribution of labels and signage for “Certified South Carolina Grown” products; the advertisement of South Carolina food products on television, radio, magazines, newspapers and billboards; and the “Fresh on the Menu” component focusing on advertising at local restaurants. Most of the campaign expenditures (>70%) are devoted to multimedia advertising.

The *first stage* of this project was devoted to developing a framework for assessing the potential economic impact of a regional promotion campaign on producer surplus that can be used at the initial stages of the campaign. The proposed approach was based on the combination of contingent valuation methods with a partial displacement equilibrium model. Contingent valuation approach was used to measure changes in consumer willingness to pay for locally grown products at the initial stages of campaign implementation when sales data necessary to directly measure the shift in demand are not yet available. This measure of advertising impact was then used in a partial displacement equilibrium model to estimate the change in producer surplus due to the campaign. The proposed approach was developed and applied to the evaluation of the potential economic impact of the South Carolina locally grown campaign after its first season in the article “To Fund or Not to Fund: Assessment of the Potential Impact of a Regional Promotion Campaign,” which was published in the Journal of Agricultural and

Resource Economics 35(2):245-260. A copy of this article is attached to this report in Appendix B. Additional evidence of the impacts of the campaign on producers after its four year of implementation is discussed in Chapter 1 of this report.

The *second stage* of this project was devoted to developing a framework to quantify the potential impact of a regional promotion campaign on consumers' welfare in a perfectly competitive market. This issue is particularly important since most agricultural state branding campaigns are taxpayer funded. The theoretical analysis reveals that the effect of government sponsored advertising depends on its conceptual characterization as informative or complementary. Government sponsored advertising that is purely informative is shown to be a welfare transfer mechanism from consumers to producers, while complementary advertising can increase total social welfare. We propose an empirical approach for establishing whether advertising is informative or complementary in nature using contingent valuation procedures. The proposed framework is applied to the estimation of the consumer welfare impact of a government sponsored "buy local" promotion program in the state of South Carolina using alternative campaign financing vehicles (a new tax versus the reallocation of current taxes). The results suggest that the South Carolina campaign is complementary in nature and increases consumer welfare by \$68 million per year. This analysis is provided in Chapter 2 of this report.

The *third stage* of this project focused on the evaluation of the economic value of separate components of the *Certified SC Grown* campaign from the perspective of participating restaurants. A stated-preference choice experiment was conducted as part of the restaurant survey in order to estimate the average willingness to pay for each campaign component. Our findings indicate that three of the campaign's existing components--Labeling, Multimedia Advertising, and "Fresh on the Menu" have significant positive economic value. Participating

restaurants would be willing to pay on average \$125.22, \$195.23, and \$212.53 per year for having these three components, respectively. On the other hand, signage did not have economic value for this group. We also found that restaurants preferred way to fund the campaign (if required) would be by donating annually instead of paying a membership fee. These results suggest that participating restaurants would be willing to donate on average \$532.98 annually to support a campaign in its current form. This figure is consistent with the estimated average increase in profitability of \$1,078. This analysis is presented in Chapter 3 of this report.

The *fourth stage* of the project concentrated on direct and indirect economic impacts of the Certified South Carolina Grown Campaign on the South Carolina economy due to increased sales at farmers markets and restaurants. We developed an IMPLAN-based SAM model of the South Carolina economy that takes into account the opportunity cost of money spent at farmer's markets to estimate the net as opposed to gross impact of the campaign on the state economy. This model was used in our estimate of the economic impact of farmers markets and restaurants on the South Carolina economy based on information about direct sales elicited from surveys of restaurant managers and farmer's market vendors and managers. The difference between the sales and profitability with the campaign versus without it provided our estimate of the direct and indirect contribution of the campaign to the South Carolina economy as transmitted through farmers' markets and restaurants. The gross impact of the program as transmitted through farmers' markets and restaurants was \$14.518 million in total industry output, \$4.731 million in earned income, \$7.557 million in gross state product, and 192.9 full-time equivalent jobs. This analysis is provided in Chapter 4 of this report.

Chapter 1.

Potential Impact of the SC Locally Grown Promotion Campaign on Producer Welfare.

Our study extended the previous literature on regional promotion campaign evaluation by developing and applying a novel approach that combines contingent valuation methods and a partial equilibrium displacement modeling (EDM) framework to provide an ex-ante assessment of a regional promotion campaign impact. An equilibrium displacement modeling approach was used to derive how the regional promotion campaign will affect prices and quantities of the labeled and mass-marketed products in the region where the campaign is taken place. It was demonstrated that the potential impacts of a campaign could be measured using information on the pre-campaign quantities, prices, market shares, and demand and supply elasticities for the labeled and mass-marketed products as well as an estimate of the shift in demand for branded products resulting from the promotion campaign. Thus, the only unknown at the initial stages of campaign implementation becomes the shift in consumer demand. Our study proposed to use contingent valuation techniques to measure the shift in consumer demand in response to promotion at the initial stages of campaign implementation. The reader is referred to the original paper by Carpio and Isengildina-Massa (2010) (provided in Appendix B) for the theoretical framework and a primary set of results. Here we apply the proposed approach to evaluate the campaign after its fourth year.

The primary data for this study were generated via three statewide surveys of South Carolinians age 18 and over: the first one before the beginning of the campaign (March, 2007), the second six months thereafter (September, 2007), and the third one after its fourth season (Spring 2011). About 500 SC consumers responded to each of the above surveys. The surveys

were designed to measure the attitudes and perceptions of South Carolina consumers about “SC grown” agricultural products. The survey also collected information on the socioeconomic characteristics of the respondents as well as consumers’ perceptions about the quality of SC products and motivations to buy state grown products. Table 1.1 presents a summary comparison of the socio-demographic characteristics of the sample versus the state population. The survey respondents were slightly older, wealthier, and better educated than the average South Carolina resident. The sample proportion of female respondents and household size were similar (slightly lower in the last survey) to the corresponding characteristics of the state population.

Table 1.1. Socio-Demographic Characteristics of Survey Respondents versus State Population

Socio-demographic characteristics	Pre-campaign Survey	Post-campaign Survey 1	Post-campaign Survey 2	State Population
Median age for population 18 years and older	45-60	45-60	45-60	40-44
Female	48.2%	52.0%	41.0%	51.3%
Median household income (\$1,000)	50-75	50-75	50-75	41.1
Persons per household	2.48	2.54	2.46	2.52

Note: State population data was obtained from the U.S. Census Bureau American Community Survey (available at <http://www.census.gov/acs/www/>).

Estimates of consumers’ willingness to pay (WTP) for locally grown products (produce and animal products) were obtained from their responses to the following contingent valuation questions:

1. If you were buying vegetables or fruit from the market, and you could choose *at equal prices* between produce (animal products) grown in South Carolina and out-of-state produce (animal products), which one would you choose?

Produce grown in SC	1
Out-of-state produce	2

Okay, what if the price of SC grown produce (animal products) was [5%, 10%, 20%, 30%, 50%] more expensive than out of state products, which one would you choose?

Produce marked as grown in SC	1
Out-of-state produce	2

If respondents indicated a preference for in-state products at equal prices, they were subsequently asked if they would be willing to pay a randomly selected premium bid, i.e. price differential (PD_H) greater than zero, to consume the in-state grown product over the out-of-state product. If they did not indicate a preference for in-state products in the first question, a follow up question with a price bid was not asked. There are three possible responses to the bid scenarios, (1) a “no” to the first bid (i.e., no preference for in-state over out-of-state products at 0% premium), (2) a “yes” followed by a “no” (preference at 0% premium, but no preference at higher premium), and (3) “yes” to both bids (i.e., preference at 0% premium and preference at higher premium). These responses were used to construct the likelihood function for estimation of the effects of the explanatory variables on a consumer mean willingness to pay for locally grown products (Carpio and Isengildina-Massa, 2009, 2010).

Table 1.2 presents summary statistics and definitions of the explanatory variables used in the WTP models. Socio-demographic factors hypothesized to influence consumer WTP for state-grown produce were age, income, gender, location and number of members in the household. Consumer characteristics describing length of residence in the state, and employment in agricultural sector were included to represent non-pecuniary factors that may affect consumption of locally grown products.

Table 1.2. Summary Statistics for the Explanatory Variables Used in the Willingness to Pay Models

Variable Name	Pre-campaign Survey (n=414)		Post-campaign Survey 1 (n=403)		Post-campaign Survey 2 (n=477)	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Age (years)	57.55	12.91	56.44	12.76	56.19	13.42
Income (\$1,000)	57.39	29.74	61.08	30.22	54.42	32.27
Gender (1=Female, 0=Male)	0.48	0.50	0.52	0.50	0.41	0.49
Number of members in the household	2.48	1.23	2.54	1.28	2.46	1.25
Number of years living in SC (0= \leq 10 years, 1= $>$ 10 years)	0.86	0.35	0.87	0.34	0.81	0.40
Working in agriculture (1=Yes, 0=No)	0.07	0.26	0.06	0.23	0.08	0.26
Motivations to buy SC products (1=support SC or SC farmers, 0= Quality or price)	0.69	0.46	0.63	0.48	0.73	0.44
Perception higher quality of SC products (1=Yes, 0=No)	0.35	0.48	0.38	0.48	0.36	0.48
Perception lower quality of SC products (1=Yes, 0=No)	0.13	0.34	0.14	0.35	0.05	0.22
Phone survey (1=Yes, 0=No)	1.00		1.00		0.27	0.44
Mail survey (1=Yes, 0=No)	0.00		0.00		0.73	0.44
Aware of the SC branding campaign (Yes=1, No=0)	0.00		0.30	0.46	0.42	0.49

It was also hypothesized that the motivation to buy SC products has an impact on the premiums consumers are willing to pay for these products. The majority of survey respondents (69%-63%-73%, in each survey, respectively) indicated that their main motivation to buy SC

products was either to support SC farmers or the SC economy. The perception about of the quality of SC products versus out of state products was included as an explanatory variable in the WTP models. When consumers were asked how the quality of SC products compared to out-of-state products, 35-38% indicated that SC products were of better quality and 13%, 14% and 5% in each survey, respectively indicated that SC products were of lower quality than products from other states. A campaign awareness dummy variable was used to capture the differences in perceptions of consumers who are aware of the campaign from those who are not. About 30% of consumers were aware of the campaign after its first season. This number grew to 42% after three additional seasons. A dummy variable for the survey method was included since the first two surveys were conducted exclusively by phone, while about two thirds of the last survey was conducted by mail due to challenges respondents appeared to have with verbally understanding questions related to measurement of the impact of the campaign on consumers' welfare (see Chapter 2). Finally, dummy variables were included to indicate the timing of the survey. Hence, two additional dummy variables for post-campaign surveys 1 and 2 were added to the models. These variables are intended to capture trends or factors related to the timing of the survey not captured by other variables.

Table 1.3 presents the results of the WTP models for produce and for animal products estimated with the data from all three surveys. These results can be compared with the ones shown in Table 5 of Carpio and Isengildina-Massa (2009) study that was based on the first survey only. In both cases, WTP for produce is positively correlated with age, income, supporting SC economy as a primary reason to buy local products and perception of higher quality, and negatively correlated with perception of lower quality.

Table 1.3. Estimation Results of the Willingness to Pay Model for South Carolina Grown Products

Variable	Produce	Animal Products
Intercept	0.094** (0.038)	0.139*** (0.046)
Mail survey	0.005 (0.018)	0.015 (0.021)
Post campaign survey 1	0.016 (0.014)	-0.015 (0.016)
Post campaign survey 2	-0.056*** (0.019)	-0.057** (0.022)
Aware of the SC branding campaign	0.030** (0.013)	0.031** (0.015)
Age	0.009** (0.004)	0.008* (0.005)
Income	0.002* (0.002)	-0.001 (0.002)
Gender	0.018* (0.011)	0.019 (0.012)
Size of household	-0.004 (0.005)	-0.009* (0.005)
Number of years living in SC	0.025* (0.015)	0.019 (0.017)
Working in agriculture	0.032 (0.021)	0.035 (0.024)
Reasons for buying SC prod.	0.030*** (0.011)	0.033*** (0.013)
Perceive higher local quality	0.086*** (0.012)	0.062*** (0.013)
Perceive lower local quality	-0.020** (0.016)	-0.017 (0.019)
σ^2	0.147*** (0.005)	0.166*** (0.001)
Log-likelihood	-1,108.2	-1,058.4
n	1,294	1,179

^aNumbers in parenthesis are asymptotic standard errors. One asterisk indicates significance at the 10% level, two asterisks indicate significance at the 5% level, and three asterisks indicate significance at the 1% level.

The new set of results also identified that females and individuals who lived in the state longer are willing to pay higher premiums for SC grown produce. Age, supporting SC economy as a primary reason to buy local products, and perception of higher quality are positively correlated while the size of the household is negatively correlated with WTP for animal products. Gender and working in agriculture become insignificant in the new set of results. The parameters in the models can be interpreted as proportional changes in mean WTP values. For example, according to the results, females are willing to pay a 1.8% higher premium than males for locally grown produce.

For comparison purposes, and to analyze the sensitivity of the results to the inclusion of socio-demographic characteristics, Table 1.4 reports the results of WTP models without socio-demographic characteristics as explanatory variables (these results are comparable to the ones presented in Table 2 of Carpio and Isengildina-Massa (2010) study). The results of the WTP regression with the second post-campaign data generally confirmed the findings of the previous study (no effect of the first post-campaign dummy); however, the dummy variable identifying the second post-campaign data was significant. In fact, the regression results show a negative effect of the variable indicating a reduction in willingness to pay. We hypothesize that this effect is likely due to the economic conditions present in the country during the time of the survey (Spring 2011). The coefficient on the awareness variable indicates that the WTP for locally grown products among consumers who are aware of the campaign increased by 4.2%.

A comparison of Tables 1.3 and 1.4 indicate that the direction of the effects and significance is generally the same with or without including socio-demographic characteristics in the model. However, the effect of the awareness dummy is higher if socio-demographic

characteristics are excluded from the model. Hence, we use the results from the complete model in Table 1.3 for our consumer surplus calculations.

Table 1.4. Estimation Results of the Willingness to Pay Model for South Carolina Grown Products

Variable	Produce		Animal products	
	Model 1	Model 2	Model 1	Model 2
Intercept	0.225*** (0.013)	0.224*** (0.001)	0.227*** (0.012)	0.227*** (0.012)
Post-campaign survey 1 (Yes=1, No=0)	0.028** (0.014)	0.015 (0.014)	-0.003 (0.016)	-0.014 (0.017)
Post-campaign survey 2 (Yes=1, No=0)	-0.035*** (0.013)	-0.052*** (0.014)	-0.028* (0.015)	-0.043*** (0.016)
Aware of the SC branding campaign (Yes=1, No=0)		0.042*** (0.029)		0.039** (0.015)
σ	0.154*** (0.009)	0.153*** (0.009)	0.171*** (0.006)	0.171*** (0.006)
Log-likelihood	-1,156.9	-1,151.9	-1,088.7	-1,085.4
Sample size	1,294		1,179	

Notes: Estimation results assume a normal probability density function. Double and triple asterisks (*) denote statistical significance at $\alpha=0.05$ and 0.01 levels, respectively. Numbers in parentheses are asymptotic standard errors.

Table 1.5 presents elasticities used in EDM (equilibrium displacement model). All elasticities except the ones shown in the bottom four rows are the same as the ones shown in Table 1 of Carpio and Isengildina-Massa (2010) study. Elasticities of supply and demand for SC grown and mass-marketed products are different because they were calculated based on average prices and shares for the expanded sample described in table 1.6 using the method outlined in the elasticity decomposition section of Carpio and Isengildina-Massa (2010) study.

Table 1.5. Elasticities Used for Model of South Carolina (SC) Grown and Mass-marketed Agricultural Products

Parameter values	Fruits and Vegetables		Animal Products	
	SC grown ($i=l$)	Mass- Marketed ($i=m$)	SC grown ($i=l$)	Mass- Marketed ($i=m$)
Aggregate own price elasticity of demand (ε) ^a		-0.77		-0.74
Aggregate own price elasticity of supply (β) ^b		1.00		0.88
Elasticity of substitution (ϑ)		2.00		3.00
Elasticity of transformation (τ)		-1.80		-1.60
Expenditure elasticity (α_i)	1.20	0.96	1.20	0.82
Expansion elasticity (ρ_i)	1.00	1.00	1.00	1.00
Elasticity of demand for:				
SC grown (ε_A^{li})	-1.74	0.82	-1.87	1.30
Mass-marketed (ε_A^{mi})	0.30	-1.02	0.98	-1.87
Elasticity of supply for:				
SC grown (β_A^{li})	1.58	-0.70	1.21	-0.39
Mass-marketed (β_A^{mi})	-0.22	1.10	-0.33	1.27

^a Huang and Lin (2000).

^b Chavas and Cox (1995) and Shumway and Alexander (1988).

Table 1.6. Prices, Quantities and Shares Used for Model of South Carolina (SC) Grown and Mass-marketed Agricultural Products

Year	Price ^{ab} (\$/lb)	Aggregate quantity demanded ^b (thousand lbs)	Fruits and Vegetables		
			w_{AA}^{DI}	w_{AT}^{Dm}	w_{AT}^{Sm}
Fruits and Vegetables					
2006	0.240	379,070	0.180	0.00300	0.000470
2007	0.279	237,409	0.134	0.00200	0.000248
2008	0.298	638,451	0.350	0.00540	0.000222
2009	0.266	551,660	0.271	0.00460	0.000909
average	0.271	451,648	0.234	0.00375	0.000462
Animal Products					
2006	0.430	1,564,920	0.470	0.00548	0.003270
2007	0.794	1,542,446	0.706	0.00930	0.000120
2008	0.772	1,765,580	0.730	0.00980	0.000078
2009	0.526	802,935	0.240	0.00360	0.006770
average	0.631	1,418,970	0.537	0.00704	0.002560

^a The aggregate price was calculated using a weighted average of prices using the quantity shares as weights.

^b Price and quantity data were obtained from the USDA, NASS, South Carolina Agricultural Statistics, E 497 and Minnesota IMPLAN Group, Inc., 2006-2009.

Finally, results of the EDM model shown in Table 1.7 can be compared to the ones shown in Table 3 of Carpio and Isengildina-Massa (2010) study. Two types of demand shifts were analyzed in this study. The first one is the average demand shift due to the effect of the campaign, based on the change in WTP among consumers aware of the campaign (3% for fruits and vegetables and 3.1% for animal products, Table 1.3) adjusted for the proportion of consumers aware of the campaign (average between first and second post-campaign surveys = 36%, Table 1.2).

Table 1.7. Price, Quantity and Producer Surplus (PS) Changes (Δ) due to the South Carolina Regional Promotion Campaign

Variable	Average Impact	Estimated potential
	$\gamma=0.019$	$\gamma=0.052$
Fruits and Vegetables		
$\% \Delta D_A^l$	0.9227	2.4936
$\% \Delta D_A^m$	-0.4157	-1.1297
$\% \Delta S_A^m$	-0.1081	-0.3412
$\% \Delta D_B^m$	0.0007	0.0019
$\% \Delta S_B^m$	-0.0009	-0.0022
$\% \Delta P_L$	0.5718	1.5724
$\% \Delta P_M$	-0.0009	-0.0025
ΔPS (Million \$)	0.7095	1.9519
	(0.1519,1.3108) ^c	(0.4216,3.6277)
	$\gamma=0.021$	$\gamma=0.058$
Animal Products		
$\% \Delta D_A^l$	0.8076	2.2761
$\% \Delta D_A^m$	-1.5020	-4.2329
$\% \Delta S_A^m$	-0.2645	-0.7453
$\% \Delta D_B^m$	0.0045	0.0128
$\% \Delta S_B^m$	-0.0054	-0.0152
$\% \Delta P_L$	0.6639	1.8711
$\% \Delta P_M$	-0.0061	-0.0173
ΔPS (Million \$)	5.9687	17.170
	(0.8510,13.2280)	(2.4180,37.844)

Notes: All calculations are based on 2006-2009 average prices and quantities.

^aThe average impact was calculated assuming a change in demand due to the campaign of 1.1% for fruits and vegetables and animal products. This value was obtained multiplying the coefficients of the awareness dummy in Table 1.3 times the average awareness between the first and second survey (36%).

^bThe estimated potential change in demand due to the campaign was assumed to be 3.0% for fruits and vegetables and 3.1% for animal products (from awareness dummy in Table 1.3).

^cEstimates in parenthesis represent the lower and upper bounds for 95% confidence intervals.

These values were taken to represent the change in the population's mean WTP and were used to calculate the exogenous shock due to advertising γ using the equation $\gamma = -\Delta WTPs_A^H$. For example, in the case of the fruits and vegetables, the 3% vertical shift in demand corresponds to $\gamma=0.019$ since $\Delta WTP = 0.03 * 0.36$ and $\varepsilon_A^H = -1.74$ (Table 1.5). The second shift in demand is the potential shift that would have occurred if all consumers were aware of the campaign. Hence, we use the effect of the “awareness” dummy variables shown in Table 1.3 which is 3% for produce and 3.1% for animal products for all consumers.

The results suggest that over the 2006-2009 period the campaign resulted in average annual increase in price of SC-grown produce by 0.57% and increase in quantity demanded of 0.92%. This impact is substantially lower than the one reported after the first season of the campaign of 1.77% increase in price and 2.94% increase in quantity demanded. For animal products, the campaign resulted in average annual increase in price of 0.66% and increase in quantity demanded of 0.81%. This finding is in contrast with no impact reported after the first season of the campaign. If the campaign is able to reach all consumers, it can potentially increase produce prices by 1.57% and quantity demanded by 2.49% (3.7% and 6.13%, respectively based on first season only) and animal product prices by 1.87% and quantity by 2.28% (2.70% and 3.41%, respectively based on first season only). In all cases, the increase in the quantity demanded for locally grown products comes at the expense of the mass-marketed products.

Changes in SC producer surplus due to the SC branding campaign can be used to measure the effects of the campaign on SC producers' welfare. The results show that over 2006-2009 the campaign was able to increase producer surplus by \$6.68 million annually (\$0.71 million for produce and \$5.97 million for animal products). However, this preference level

reflects only about a 36% rate of campaign awareness. If the campaign is able to reach all consumers over the long run our estimates indicate a total increase in producer surplus of almost about \$19 million dollars. While the average impact reported here is higher than the one found after the first season of campaign (\$1.64 million), the long run potential is consistent with those findings (\$22 million).

Since the estimated changes in producer surplus represent the potential benefits to producers due to campaign effects they can be used to calculate the return on investment for the SC regional promotion campaign. In the 2010 study we reported that the \$3.09 million change in the producer surplus (the short run effect after the first season of the campaign) and the \$500,000 of total investment in the campaign in 2007, results in a return of investment of 618% or benefit-cost ratio of 6.18. The updated results suggest average increase in producer surplus of \$6.68 million annually, which compared with campaign expenditures of \$1.3 million results in a benefit-cost ratio of 5.14 or return on investment of 514%. This value reflects the impact of the campaign on producer welfare only. The impacts on consumers, restaurants and farmers markets as well as indirect impacts throughout the state economy are evaluated in the subsequent chapters of this report.

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Chapter 2.

Government Sponsored Advertising and Consumer Welfare

Introduction

Government funded advertising campaigns play an important role in agricultural and food policy around the world (e.g., Sylvander et al 2002, Kaiser et al 2005). For example, in the European Union such campaigns have been supported by the 1992 legislation of the European Commission [Regulation (EEC) N 2081/1992] which enabled producers to legally protect their regional products based on either destination of origin (PDO) or geographical indication (PGI) with the overall goal of increasing diversification of regional agricultural production, stimulating the economy of rural areas and enhancing regional farm incomes (Commission of the EU 1992). Subsequent legislation in 2001 (Commission of the EU 2001) provided guidelines for State aid for promoting products that are protected based on their destination of origin (PDO). Other international examples of government sponsored regional promotion campaigns include “Buy Malaysian Products” and “Ecuador First,” both in effect since the late 2000s.

In the United States, regional promotion programs have grown rapidly since the mid-1990s. The number of states conducting such programs went up from 23 to 43 between 1995 and 2006 (Patterson 2006) and by 2010 programs were in place in all 50 states (Onken and Bernard 2010). A large portion of this increase resulted from the Community Food Security Act (part of the Nutrition Title of the Federal Agriculture Improvement and Reform Act of 1996, P.L. 104-127), which generated \$22 million of support for 166 local food system initiatives between 1996 and 2003 (Tauber and Fisher 2002). The continued support for regional products has been expressed in The Food, Conservation and Energy Act of 2008 (P.L. 110-246) which directs the Secretary of Agriculture to encourage institutions, such as schools, to purchase unprocessed

agricultural products, both locally grown and locally raised, to the maximum extent practicable and appropriate. Specific appropriations by state governments are another significant source of funding for regional promotion campaigns in the U.S.

While the goals of the regional promotion campaigns around the world vary from discouraging the purchase of imported products to protection of region of origin labeling to supporting local economies and promoting healthy lifestyle, a common characteristic of these campaigns is that they are funded by the taxpayer money. Therefore the effectiveness of the campaign depends on its overall impact on economic welfare as well as the distributional benefits to various segments of the society. Holloran and Martin (1989) and Adelaja and Brumfield (1991) question both equity and ethical issues associated with state branding and promotion campaigns if taxpayer dollars are used to enhance the welfare of a few middlemen. Previous studies of regional promotion campaigns are largely limited to the effects of advertising on producer surplus (e.g., Kaiser et al. 2005; Govindasamy et al. 2003; Carpio and Isengildina-Massa 2010). Only a few studies examined the benefits of such campaigns to consumers (e.g., Wohlgenant 1993; Alston Chalfant and Piggot 2000; Cardon and Pope 2003). Given that producers typically represent a small proportion of the total population, the effects of government sponsored advertising on consumer welfare should not be overlooked.

Evaluation of the impact of advertising on consumer welfare is complicated by the fact that the overall impact can be positive or negative depending on whether advertising is informative, persuasive or complementary (e.g., Kaldor 1950; Telser 1964; Becker and Murphy 1993; Fisher and McGowan 1979) in nature. Since most previous studies focused on the impact of advertising on the firm level, their analysis was

developed for the imperfectly competitive market structure, an assumption that is not suitable for the government sponsored advertising in highly competitive agricultural markets (Dixit and Norman 1978; Becker and Murphy 1993). Furthermore, there is a paucity of empirical studies quantifying the welfare effects of advertising. To the best of our knowledge, the only empirical studies analyzing welfare effects of advertising on consumers have been conducted for the U.S. alcohol and cigarette industries. Tremblay and Tremblay (1995a) and Farr, Tremblay and Tremblay (2001) estimate the welfare effect of advertising for the U.S. cigarette industry. To account for the different forms of advertising these authors utilize three different empirical models assuming cigarette advertising is alternatively: purely persuasive, purely informative, or purely complementary. Tremblay and Tremblay (1995b) use Becker and Murphy's (1993) complementary advertising framework to analyze the welfare effect of advertising in the US brewing industry.

The goal of this study is to analyze the effect of advertising on social welfare in the perfectly competitive market where the level of advertising is chosen by a social planner. This theoretical contribution is accompanied by the empirical analysis of the impact of the South Carolina "buy local" food campaign on consumer welfare. We propose a novel approach to empirically determine whether advertising is informative or complementary in nature using contingent valuation procedures. Furthermore, since the South Carolina "buy local" campaign is sponsored and funded by the regional government, we evaluate how the use of alternative campaign financing vehicles (a new tax versus the reallocation of current taxes) effects the evaluation of the promotion campaign.

The theoretical framework developed in this study can be used for evaluation of different types of government sponsored promotion programs around the world. The empirical findings

will help the South Carolina government with their campaign evaluation efforts and contribute evidence on the effectiveness of the regional promotion campaigns in the United States.

Conceptual Framework

The welfare effect of advertising has been a subject of debate among economists for some time. The controversy stems from the conceptual characterization of advertising as persuasive, informative or complementary in the consumption of other goods. According to the persuasive view, advertising is deceptive in nature and persuades consumers to buy commodities they did not previously find useful (Kaldor 1950). The informative view (Telser 1964) contends that advertising benefits society by informing consumers about products characteristics, prices and availability. The complementary view argues that advertising influences demand by operating as a complement in the consumption of the advertised good (Becker and Murphy 1993; Fisher and McGowan 1979). Previous studies focus mostly on the firm level analysis and examine the impact of advertising on social welfare under the imperfect competition assumption. Our study concentrates on the impact of government sponsored advertising in highly competitive agricultural markets. In this section we show how the three types of advertising affect social welfare in perfectly competitive markets through (1) graphical analysis, (2) examination of marginal changes. Our model allows us to develop a novel approach to empirically determine whether advertising is informative or complementary in nature of advertising using contingent valuation procedures.

Welfare Effects of Advertising in a Perfectly Competitive Market: Geometric Analysis

The perfectly competitive market structure is characterized by the demand function and the aggregate supply function that simultaneously determine equilibrium prices and quantities. This model is described in Figure 2.1 (see p. 50). The initial supply and demand curves are S_0 and D_0 which result in the equilibrium price P_0 and quantity Q_0 . The impact of an effective government sponsored promotion campaign on consumer demand is illustrated by the shift of the demand curve from D_0 to D_1 .¹ Since advertising is sponsored by the government, the producer cost structure remains unchanged. The equilibrium prices and quantities increase from P_0 to P_1 and Q_0 to Q_1 , respectively. The new equilibrium illustrates a shift in demand and a movement along a supply curve.

Purely Persuasive Advertising

If advertising is purely persuasive or deceptive, the promotion campaign is designed to convince consumers that they would be better off with the advertised product. Therefore, consumer welfare should be evaluated using pre-advertising tastes (Dixit and Norman 1978; Carlton and Perloff 2000). Hence, the demand curve D_0 , representing consumers' true preferences, is used to measure the effect of advertising on consumer surplus. Consumer surplus without advertising is equal to area P_0NT_0 . With advertising, consumer surplus becomes $P_1JT_0 - MKJ$. Notice that the area $NMKG$ represents expenditures that would not occur if consumers were not misled by advertising. The change in consumer surplus due to advertising is always negative and represented by $\Delta CS_{pers} = -P_0NKP_1 - MKJ$. Change in producer surplus is $\Delta PS_{pers} = P_0NKP_1$. Therefore, if the social planner engages in a promotion campaign of a

¹ Throughout this section we assume: a) linear supply and demand curves, and b) the only effect of advertising is an outward shift of the demand curve. The analytical framework presented in the next section is more general and relaxes these assumptions.

product and the advertising is purely persuasive, the change in total welfare due to advertising in the market for that good is always negative and given by $\Delta TS_{pers} = -NMK$. Furthermore, the losses in consumer surplus due to this type of advertising outweigh the gains in producer surplus. However, the effects of persuasive advertising for rational optimizing consumers should only be temporary; hence, we will not consider this form of advertising in the next sections.²

Purely Informative Advertising

If advertising is informative in nature, consumers learn about product characteristics, and the demand curve D_1 reflects consumers' true preferences and should be used to measure the effect of advertising on consumer surplus (Dixit and Norman 1978; Carlton and Perloff 2000). Consumer surplus without advertising equals area P_0NGT_1 . With advertising, consumer surplus becomes P_1KT_1 . The change in consumer surplus due to advertising is negative and given by $\Delta CS_{inf} = -P_0NJP_1$. Change in producer surplus is positive and represented by $\Delta PS_{inf} = P_0NKP_1$. Therefore, if the social planner engages in a promotion campaign of a product and advertising is purely informative, the change in total welfare due to advertising in the market for the good is always positive and given by $\Delta TS_{pers} = NKJ$. Thus, this form of advertising is able to generate a net benefit to society.

Complementary Advertising

If advertising is complementary in nature, it influences demand by acting as a complement to the consumption of the advertised good. In this case, advertising enters utility directly as an additional argument. The effect on demand is similar to that of

² One would also hope that advertising funded by government agencies is not deceptive.

quality improvement and the demand curve D_1 reflects consumers' post-advertising preferences (Becker and Murphy 1993; Cardon and Pope 2003; Tremblay and Tremblay 1995a). In Figure 2.1, consumer surplus without advertising equals P_0NT_0 , consumers surplus with advertising equals P_1KT_1 , and the change in consumer surplus due to advertising is positive and given by $\Delta CS_{compl} = T_0JKT_1 - P_0NJP_1 = P_1KGR$. Change in producer surplus is given by $\Delta PS_{compl} = P_0NKP_1$. Thus, both consumers and producers benefit from this type of advertising. When advertising is complementary, if the social planner engages in a promotion campaign, the total welfare change due to advertising is always positive and given by $\Delta TS_{compl} = P_0NKGR$.

Welfare Effects of Advertising in a Perfectly Competitive Market: Marginal Analysis

To analyze the marginal changes in welfare due to government sponsored advertising in a perfectly competitive market, we follow Dixit and Norman (1978) and Cardon and Pope (2003) and assume consumer demand is generated by a quasi-linear utility function:³

$$(2.1) \quad U = z + u(x, A)$$

where x is the market output of the competitive industry, z is the numéraire good, and A is the advertising level chosen by the social planner. Consumption of the numéraire good is given by $z = I - px$, where I is income. Utility maximization subject to the budget constrains yields the following inverse and direct demand functions:

$$(2.2) \quad p = u_x(x, A) \quad \text{and} \quad x = x(p, A)$$

On the supply side, assume industry profits are given by $\Pi(p, A) = px - f - cx$, where c is the marginal cost of output, and f is the fixed production cost. Profits are assumed to be a function of the level of advertising A . However, since advertising is sponsored by the government, the cost of advertising to the industry is assumed to be zero.

³ This simplifies welfare analysis by eliminating income effects. Hence, consumer surplus can be used as a welfare measure.

Total social welfare is:

$$(2.3) \quad W(A) = u(x(p, A), A) + I - px(p, A) + \Pi(p, A)$$

The effect of advertising on total social welfare is determined by totally differentiating equation (3) with respect to A :

$$(2.4) \quad \frac{dW}{dA} = \frac{\partial x}{\partial A}(u_x - p) + \frac{\partial x}{\partial p} \frac{dp}{dA}(u_x - p) + u_A - x \frac{dp}{dA} + \frac{\partial \Pi}{\partial A}.$$

Hence, the marginal effect of the level of advertising selected by a social planner includes both the impact on industry profits $\left(\frac{\partial \Pi}{\partial A}\right)$ and the impact on consumers. In the perfectly competitive markets $p = c$, hence $\frac{\partial \Pi}{\partial A} = x \frac{dp}{dA}$. Thus, industry profits increase when advertising increases the equilibrium output price $\left(\frac{dp}{dA} > 0\right)$. Utility maximization implies that $p = u_x(x, A)$ and equation (2.4) simplifies to

$$(2.5) \quad \frac{dW}{dA} = u_A - x \frac{dp}{dA} + x \frac{dp}{dA} = u_A.$$

Equation (2.5) combines the effect of advertising on consumers $\left(u_A - x \frac{dp}{dA}\right)$ and producers $\left(x \frac{dp}{dA}\right)$. Equation (5) also demonstrates how the characterization of advertising: the informative type of Dixit and Norman (1978) versus the complementary type of Becker and Murphy (1993) can be empirically investigated, since the only difference between the two types is the effect of advertising on utility.

The informative view assumes that $u_A = 0$. Hence, under the informative characterization, social planner sponsored advertising entails a transfer of welfare from consumers $\left(-x \frac{dp}{dA}\right)$ to producers $\left(x \frac{dp}{dA}\right)$ or vice versa but not a change in total social

welfare.⁴ In other words, in a perfectly competitive market, advertising can be used by a social planner as a welfare transfer mechanism. This result contrasts with Dixit and Norman's (1978) finding for imperfectly competitive markets (with $\frac{\partial \Pi}{\partial A} = 0$) where an increase in advertising levels decreases society's total welfare ($-x \frac{dp}{dA} < 0$) when advertising increases equilibrium output price ($\frac{dp}{dA} > 0$). Differences between the effects of a marginal change (analyzed using derivatives in this section) and a finite change (analyzed using graphs in the previous section) are due to the second order smallness of the triangles around the market equilibrium point. In the case of informative advertising, whereas the geometric analysis of advertising determines a potential increase in total welfare due to a price increasing advertising campaign (given by area NKJ in Figure 2.1), the marginal analysis only shows a net transfer of welfare.

When advertising affects utility, which is assumed under Becker and Murphy's (1993) complementary type, it becomes possible that social planner sponsored advertising campaign will change society's total welfare. The change in consumer surplus is determined by the signs and relative magnitudes of u_A and $x \frac{dp}{dA}$. In this case the finite and marginal analyses can be made comparable by noting first that $u(x, A) = \int_0^x u_x(t, A) dt$ and since $u_x(x, A) = p$, then $\int_0^x u_x(t, A) dt = \int_0^x p(t, A) dt$. Therefore, the change in utility is,

$$(2.6) \quad u_A = \int_0^x \frac{\partial p(t, A)}{\partial A} dt,$$

⁴ Government funded campaign can promote or discourage the consumption of certain products and hence $\frac{dp}{dA}$ can be higher, lower or equal to zero. Examples of campaigns discouraging the consumption of goods include anti-smoking campaigns.

which is given by area T_0NGT_1 in Figure 2.1.⁵ Observe that if the shift in demand is parallel, the area equals T_0JKT_1 which in the graphic analysis was identified as the increase in consumer surplus due to advertising.⁶ The reduction in consumer welfare due to the advertising induced price increase is $x \frac{dp}{dA}$, which is shown in Figure 2.1 by area P_0NEP_1 (slightly different than the area identified in the geometric analysis, P_0NJP_1 , due to the second order smallness of area JEN).

This section presented a theoretical model that encompasses both the complementary and informative views of advertising. The model indicates that under the complementary view, two factors influence the overall impact of advertising on consumer welfare, the effect of advertising on utility and the effect of advertising induced price change (u_A and $-x \frac{dp}{dA}$). On the other hand, if advertising is informative, the marginal effect on utility u_A is not considered (or assumed to be zero) and its effect on consumer welfare is determined only by the change in price ($-x \frac{dp}{dA}$). Therefore, under the complementary view of advertising, social planner sponsored promotion campaigns can increase society's total welfare, while under informative view they only result in a transfer of welfare from consumers ($-x \frac{dp}{dA}$) to producers ($x \frac{dp}{dA}$) or vice versa but not a change in total social welfare. The nature of government sponsored advertising can be determined by investigating whether the marginal effect of advertising on consumer utility u_A is different than zero⁷.

⁵ Note that $\frac{\partial p(t,A)}{\partial A}$ is the marginal willingness to pay for advertising (Tirole 1988). Hence, an increase in the marginal willingness to pay for advertising shifts the advertising demand curve and subsequently the demand curve for its complement: the good being advertised.

⁶ The two areas will likely differ in the case of a nonparallel shift in demand.

⁷ As mentioned before, this approach assumes that government sponsored advertising is not likely to be purely persuasive or deceptive.

Compensating Welfare Measures of Advertising Effects

Previous attempts to empirically evaluate the impacts of advertising on consumer welfare (e.g., Tremblay and Tremblay 1995a) have relied on revealed preferences (i.e., market data). The limitations of this approach stem from the fact that market data does not allow the researcher to disentangle the effect of advertising on utility from its effect due price change. Thus, the researcher is unable to determine whether advertising is informative or complementary in nature and has to make assumptions about the nature of advertising and use different measures of the welfare effect based on these assumptions. In lieu of this approach we propose to use compensating welfare measures estimated using contingent valuation methods to empirically determine whether government sponsored advertising is informative or complementary in nature.

The compensating welfare measure is the amount of income that could be taken away from a household after a policy (e.g., increase of the level of advertising by a social planner) has been implemented in order to leave the household indifferent to the policy (Freeman 2003). In terms of policy implementation, the social planner's most obvious alternative to "take away" money from the consumer is a new tax. However, most government sponsored advertising campaigns are funded using current tax revenues instead of new taxes. In this section we discuss compensating welfare measures for both campaign financing alternatives: a new tax versus tax reallocation.

New Tax

Using 0 superscripts to denote the initial conditions and 1 superscripts to denote the post-advertising conditions, we define the compensating welfare measure (CW), using the indirect

utility function $V(\cdot)$:⁸

$$(2.7) \quad V(p^0, A^0, I^0) = V(p^1, A^1, I^1 - CW)$$

Hence, contingent valuation can be used to measure the effects of “policies” affecting advertising levels (A), prices (p) and income (I), simultaneously or separately. Assuming income level remains unchanged before and after the policy ($I^0 = I^1$), the change in consumer welfare encompassing both the utility effect due to change in the advertising level from A^0 to A^1 and the price effect due to increase in price from p^0 to p^1 (i.e., complementary effect of advertising) is given by CW_T in

$$(2.8) \quad V(p^0, A^0, I^0) = V(p^1, A^1, I^0 - CW_T).$$

The effect of advertising on utility can be estimated considering only a change in the level of advertising ($A^1 > A^0$) with no change in the price of the advertised good ($p^1 = p^0$):

$$(2.9) \quad V(p^0, A^0, I^0) = V(p^0, A^1, I^0 - CW_C).$$

Here CW_C represents the discrete version of u_A from equation (2.5). The difference between CW_T and CW_C can be interpreted as the welfare effect of the informative type of advertising (i.e., the discrete version of $x \frac{dp}{dA}$ from equation (2.5)).

Tax Reallocation

A tax reallocation payment vehicle requires the consumer to tradeoff some amount of other public goods (Z) to obtain an increase in A . The compensating welfare

⁸ The utility function $V(\cdot)$ in equation (7) corresponds to a direct utility of more generality than that shown in equation (1). In fact, this equation can be said to represent the indirect utility function of the consumer problem where demand is generated by a utility function $u(x_1, x_2, \dots, x_n, A_1)$ subject to the budget constraint $I = \sum_{i=1}^n x_i p_i$, where x_i is the quantity of the i th good, p_i are the quantity, price and amount of advertising for i th good, respectively. The indirect utility function of this problem has the form $V(p_1, p_2, \dots, p_n, A_1, I)$. For simplicity, equation (7) only includes the arguments of interest and assumes that all other arguments in the indirect utility are constant between the initial and final conditions.

measure obtained in this context is referred to as compensating tax reallocation (*CTR*)

(Bergstrom et al. 2004). In general, the *CTR* can be defined as:⁹

$$(2.10) \quad V(p^0, A^0, Z^0, I^0) = V(p^1, A^1, Z^1 - CTR, I^0).$$

Note that *CTR* is expressed in dollars and can be subtracted from a composite measure of measure of all public goods *Z*. If income levels remain unchanged before and after the policy policy ($I^0 = I^1$), the change in consumer welfare due to complementary advertising is given by given by CTR_T in:

$$(2.11) \quad V(p^0, A^0, Z^0, I^0) = V(p^1, A^1, Z^1 - CTR_T, I^0).$$

The effect of advertising on utility only (CTR_C) can be estimated considering only a change in the level of advertising while keeping the price constant ($p^0 = p^1$):

$$(2.12) \quad V(p^0, A^0, Z^0, I^0) = V(p^0, A^1, Z^1 - CTR_C, I^0).$$

In the same manner as with the *CW* measures, the difference between CTR_T and CTR_C is the welfare effect of the informative type of advertising. As shown in Bergstrom et al. (2004), the relative magnitude of *CW* and *CTR* is determined by the relative marginal value of a consumer having a bundle of public goods (*Z*) and private goods (disposable income). If a consumer lives in a region where the existing bundle of public goods available to citizens has a high (low) marginal value relative to private goods, then *CTR* should be lower (higher) than *CW*.

⁹ The consumer optimization problem corresponding to the indirect utility function in (10) includes *Z* as an argument in utility $u(x_1, x_2, \dots, x_n, A_1, Z)$ and the constraint $I = \sum_{i=1}^n x_i p_i + Z$, where *Z* is a composite commodity of all public goods with unit price. Since *Z* is “rationed”, the demand functions for the *i*th good also have *Z* as an argument, and therefore, the indirect utility function for this problem has the form $V(p_1, p_2, \dots, p_n, A_1, Z, I)$ (see Bergstrom et al., 2004; Cornes, 1992). However, notice that in contrast to Bergstrom et al. (2004) we define *CTR* using the indirect utility function rather than the expenditure function. Also, for simplicity, the indirect utility function in equation (10) only includes the arguments of interest.

Equations (2.7) to (2.12) provide the theoretical definition of the welfare effect of a discrete change of advertising on consumers, as well as the link between the theoretical and the empirical aspects of this study. The empirical strategy for determining the nature of advertising consists of contingent valuation procedures to estimate consumer willingness to pay (*CW* or *CTR*) for advertising campaigns that differ in price effects (from no effect to 3% and 6% increase). This variation in advertising induced price increases allows us to separate the welfare effects of the price increase from the direct effect of advertising on utility (no price effect), thereby enabling us to empirically establish whether advertising is informative or complementary in nature.

Empirical Analysis

The South Carolina Promotion Campaign

The methodology developed in the conceptual framework is applied to the evaluation of the impact of the South Carolina “buy local” promotion campaign on consumer welfare. The campaign was launched on May 22, 2007 and was financed by special appropriations from the state legislature from 2007 to 2010 with average annual expenditures of \$1.3 million. This campaign is an illustration of the growing trend across state governments to promote locally grown products. The continued support for regional products has also been expressed in The Food, Conservation and Energy Act of 2008 (P.L. 110-246) which directs the Secretary of Agriculture to encourage institutions, such as schools, to purchase unprocessed agricultural products, both locally grown and locally raised, to the maximum extent practicable and appropriate. The goal of the South Carolina “buy local” campaign is to increase consumer demand for the state produced

food products (<http://www.certifiedscgrown.com>). Campaign activities include the design and distribution of labels and signage for “Certified South Carolina Grown” products; the advertisement of South Carolina food products on television, radio, magazines, newspapers and billboards; and the “Fresh on the Menu” component focusing on advertising at local restaurants. Most of the campaign expenditures (>70%) are devoted to multimedia advertising.

Data

The data were collected via a mail survey of 4,000 South Carolina households randomly selected from a list provided by a professional survey research firm. Four hundred and nine usable responses were collected from the survey (10.2% response rate) but after deleting observations with missing values only 317 observations were used for the analysis. In addition to the valuation questions for the locally grown campaign, the survey collected information on the socioeconomic characteristics of the respondents. The average socio-demographic characteristics of survey respondents shown in Table 2.1 (p. 47) demonstrate that our sample contained slightly less female respondents than the state average¹⁰ of 51.3%. Survey respondents were also slightly older than the average South Carolina resident (40-44 years old), but sample household size and income were very similar to state averages of 2.52 and \$58,368, respectively.

The valuation questions were designed to elicit consumer willingness to pay (*WTP*) for the campaign using two alternative payment vehicles: a special tax and a tax reallocation. Thus the *WTP* measured either *CW* from the new tax or *CTR* from tax reallocation (equations 7-12). In the case of the new tax, the *WTP* questions (listed in Appendix 2.1, p. 51) clearly indicated that the special tax needed to fund the program would reduce the amount of money a household has to spend on other private goods. In the case of tax reallocation, it was explained that this measure

¹⁰ State population data according to the U.S. Census Bureau 2005-2009 American Community Survey (available at <http://www.census.gov/acs/www/>).

would decrease the current amount of household taxes spent on other public goods without affecting disposable income. The valuation questions were preceded by statements explaining the campaign goals and components, amount and the source of funding and questions about awareness and general support for the campaign.

Valuation questions used a dichotomous choice format, where a respondent was asked if she would vote to support the campaign given a specified program cost (C_I) in terms of a special tax or tax reallocation (Appendix 2.1). Respondents were also provided with an estimate of the percentage increase in the price of South Carolina food products due to the campaign (0%, 3% and 6% increase). If respondents indicated that they were willing to accept the initial bid, they were subsequently asked if they would be willing to accept a higher bid (C_{SH}). Alternatively, if the respondents were not willing to accept the initial bid, a lower follow up bid (C_{SL}) was offered. The contingent valuation questions and bid levels were developed and validated on the basis of about 100 pre-test phone surveys.

The four possible responses to the bid scenarios were (1) a “yes” to both bids, (2) a “no” followed by a “yes”, (3) a “yes” followed by a “no”, and (4) “no” to both bids. The sequence of questions defined the following ranges for the WTP values: $(\infty, C_{SH}]$, $[C_{SL}, C_I)$, $[C_I, C_{SH})$, and $(0, C_{SL})$. The following four discrete outcomes of the bidding process were observable:

$$(2.13) \quad D = \begin{cases} C_{SH} \leq WTP < \infty & (\text{response outcome 1}) \\ C_{SL} \leq WTP < C_I & (\text{response outcome 2}) \\ C_I \leq WTP < C_{SH} & (\text{response outcome 3}) \\ 0 < WTP < C_{SL} & (\text{response outcome 4}). \end{cases}$$

Econometric Models

Determinants of Willingness to Pay

The impact of explanatory variables on consumer *WTP* is analyzed using the function:

$$(2.14) \quad WTP = X\beta + \varepsilon ,$$

where X is a vector of explanatory variables, β is a conformable vector of coefficients, and ε is a random variable accounting for unobservable characteristics. Using equation (2.12) and assuming that $\varepsilon \sim H(0, \sigma^2)$, where H is a cumulative distribution function with mean zero and variance σ^2 , we derive the choice probabilities corresponding to expression (2.11) as:

$$(2.15) \quad P(WTP \geq C_{SH}) = 1 - H(C_{SH} - X\beta)$$

$$P(C_{SL} \leq WTP < C_I) = H(C_{SL} - X\beta) - H(C_I - X\beta)$$

$$P(C_I < WTP \leq C_{SL}) = H(C_I - X\beta) - H(C_{SL} - X\beta)$$

$$P(WTP < C_{SL}) = H(C_{SL} - X\beta).$$

The log-likelihood function is:

$$(2.16) \quad L = \sum_{D_1} \ln[1 - H(C_{SH} - X\beta)] + \sum_{D_2} \ln[H(C_{SL} - X\beta) - H(C_I - X\beta)] + \sum_{D_3} \ln[H(C_I - X\beta) - H(C_{SL} - X\beta)] + \sum_{D_4} \ln[H(C_{SL} - X\beta)] ,$$

where D_j indicate the group of individuals belonging to the j^{th} bidding process outcome from the survey (equations 2.13). The approach outlined in equation (2.16) is an adaptation of the censored regression estimation procedure based on “closed-ended” contingent valuation survey data proposed by Cameron and James (1987) and Cameron (1988). Estimation of the parameters in equation (2.16) requires assuming a specific distributional form for H . The most commonly assumed distributions are the lognormal and the normal (Cameron 1988). The model was

estimated under both distributional assumptions and Vuong's (1989) likelihood ratio test was used to select a preferred model.

The vector of explanatory variables in (2.14) included dummy variables for payment vehicle (new taxes and current taxes), respondent awareness of the campaign, respondent perceptions regarding the quality of the local products and gender (see Table 2.1). The vector also included continuous variables for the estimated price increase in local products due to the campaign, household income, and the age of the respondent. The price increase variable (p), income (I) and payment vehicle (CW and CTR) have direct correspondence with variables included in the theoretical section equations (2.7) to (2.12). All other variables in the empirical model account for differences in consumers' WTP for the campaign due to demographic characteristics and perceptions (Boyle 2003). Maximization of the log-likelihood functions was performed using MATLAB.

Results and Discussion

Summary Statistics

Summary statistics of the explanatory variables shown in Table 2.1 (p. 47) illustrate that while only 43% of survey respondents were aware of the campaign, an overwhelming 84% of respondents supported it. The majority of survey respondents (73%) indicated that their main motivation to buy South Carolina food products was either to support South Carolina farmers or the South Carolina economy. When consumers were asked how the quality of South Carolina products compared to out-of-state products, 62% indicated that South Carolina food products were of the same or better quality than products from out of the state. Previous studies have shown that

consumers often respond to non-pecuniary factors in their choice of consumption of locally grown products (e.g., Scarpa, Phillippidis, and Spalantro 2005; Eastwood, Brooker and Orr 1987). Consumer characteristics describing length of residence in the state and employment in agricultural sectors are included to control for these non-pecuniary factors. About 82% of survey respondents lived in the state more than 10 years, and most (95%) did not work in agriculture.

Summary statistics of the responses to the dichotomous choice questions are reported in Table 2.2 (p. 48). Even though 84% of respondents supported the campaign when no mention of payment was made (Table 2.1), only 46% of respondents indicated that they were willing to pay the initial bid to fund the promotion campaign. About a third of respondents not willing to pay the initial bid, agreed to pay a smaller follow up bid.

WTP Regression Analysis

The *WTP* regression model results are shown in Table 2.3 (p. 49). The parameters of the *WTP* function were estimated assuming both a normal and a lognormal distribution. We present the results for the normal distribution as the Vuong's model selection test for strictly non-nested models provides evidence to reject the null hypothesis that the normal and lognormal models are equivalent ($\alpha < 0.01$) in favor of the alternative that the normal model is better than the lognormal model (Vuong 1989). The parameter estimates of the continuous variables represent the change in the *WTP* for the South Carolina "buy local" campaign given a one unit change in the variable. Thus, a \$10,000 increase in income is estimated to raise the *WTP* for the campaign by \$2.10. Respondent age was not significantly related to *WTP*.

The marginal effects of the dummy explanatory variables can be interpreted relative to those not included in the model: a male, who is not aware of the campaign, whose valuation

question (a) used a new tax as the payment mechanism, and (b) assumed no change in the price of the advertised South Carolina food products. Results indicate that females are willing to pay \$13 per year more for the campaign than males. Consumers that are aware of the campaign are willing to pay about \$11 per year more than those who are not aware of the campaign. This result can be interpreted as a change in demand for the promotion campaign due to the impact of advertising on consumer preferences.

Welfare Effects: Complementary versus Informative Advertising

Whether advertising is complementary or informative in nature can be inferred from comparing the *WTP* for an increase in the level of advertising ($A^1 > A^0$) that does not change the price of the advertised goods ($p^1 = p^0$), to the one that increases the price of the advertised good ($p^1 > p^0$). Hence, it is of interest to estimate both the mean *WTP* values for each case as well as the difference between the cases. We first discuss the difference in *WTP* between the two cases, which can be estimated directly from the regression results, followed by a discussion of the mean *WTP* estimated using the two alternative payment vehicles.

The price effect in the *WTP* model was estimated using a dummy variable (percentage increase in price due to campaign in Table 2.3).¹¹ The parameter estimate indicates that, relative to consumers whose valuation question used a 0% price increase for South Carolina food products, *WTP* of consumers faced with a 3% or 6% potential price increase was about \$11.86 lower. The estimated difference in the *WTP* for

¹¹ The dummy variable restricts the effect of a 3% price increase to be equal to effect of a 6% price increase. The reason for combining these two categories was empirical. A model including dummy variables for each category separately yielded effects that were not statistically significant different. Another model including estimating a linear effect yielded insignificant results.

advertising with and without a price increase can be interpreted as the welfare effect of advertising under the informative view.

Payment Instrument

The effect of the payment instrument used in the valuation question is demonstrated by the regression results that indicate that the *WTP (CW)* using a current tax is nearly \$30 greater than *WTP (CTR)* using a new tax.¹² Since the relative magnitude of *CW* and *CTR* is determined by the relative marginal value of consumer's existing bundle of public goods (*Z*) and private goods, this finding suggests that in South Carolina the marginal value of publicly provided goods relative to privately purchased goods is low.

To complete the *WTP* analysis we compared the acceptance rates (i.e., the percentage of respondents answering yes to the bid questions) for valuation questions using the new tax and the current tax. The percentage of respondents that answer yes to the first and second valuation question using the current tax was 54% and 44%, respectively. However, only about 37% of respondents answered "yes" to the valuation questions based on a new tax. These percentages of acceptance are reflected in the estimated willingness to pay values. From a policy implementation perspective, these percentages suggest that if the funding for the campaign was placed on a ballot, the campaign is more likely to be supported if the source of funding came from the current rather than new taxes.

Aggregate Economic Welfare Effects of the Promotion Campaign

Mean *WTP* estimates can be obtained using equation (2.14) with the mean values of the explanatory variables (\bar{X}) and the estimated parameter vector $\hat{\beta}$ (Boyle, 2003). Average *WTP*

¹² In contrast to Bergstrom et al. (2004) who estimated different models for *CW* and *CTR*, we pooled the data together and estimated one model. The validity of the pooled model with main effects only was evaluated by estimating a model that included interactions between payment vehicle and all other variables in both the mean and variance functions. The likelihood ratio test failed to reject the null hypothesis that the interaction terms are not significantly ($\alpha < 0.01$) different from zero.

values for groups of consumers represented by the dummy variables can be calculated by replacing the mean value of the element \bar{X}_i in \bar{X} by a one or zero. For example, the average *WTP* for advertising without a price increase can be estimated using the average of the predicted *WTP* values using a 0% price increase (i.e., price dummy=0). The estimated average *WTP* value for this scenario is \$37.57 which represents the pure effect of advertising on utility. Since the best available estimate regarding the potential campaign induced price increase is about 3% (Carpio and Isengildina-Massa 2010), the mean *WTP* value including both the pure effect of advertising in utility and the effect of advertising due to the price increase (price dummy=1) is \$25.71. This value can be interpreted as the welfare effect of advertising under the complementary view. Moreover, this estimate represents the average effect across both payment vehicles.

Given that the payment vehicle matters, the natural question to ask is what is the best estimate of the value of the campaign for consumers that can be used, for example, for a cost benefit analysis? As argued in Mitchell and Carson (1989) the choice of payment vehicle requires balancing realism against payment-vehicle rejection. Both payment vehicles are realistic from a policy implementation perspective; however, the new tax payment vehicle is more likely to result in rejection. This is consistent with a follow up question included in the pilot survey for respondents answering no to the bid question using new taxes that revealed that about 60% of respondents “do not agree with any special or new tax.” Hence, the *WTP* estimates using a new tax can be interpreted as a lower bound of the true *WTP* value. Given the fact that the South Carolina campaign is funded using current taxes, the *WTP* estimates using current taxes likely represent the true value of the campaign to consumers.

The mean *WTP* using current taxes and no price effect is about \$52 per household and decreases to \$40 per household when the estimated price effect is taken into account. The mean *WTP* using new taxes and no price effect is about \$23 per household and decreases to \$11 per household when the price effect is considered. In both cases the effect of advertising on utility is significantly higher (at least 1.9 times in absolute value) than the effect arising from the price increase (i.e., informative advertising effect). Thus, the increase in consumer welfare due to the effect of advertising in utility outweighs the loss in welfare resulting from the estimated price increase. This finding suggests that government sponsored advertising within the South Carolina “buy local” food campaign is complementary in nature and leads to an increase in consumer surplus.

According to the U.S. Census Bureau there are approximately 1.7 million households in South Carolina. Based on actual campaign funding using current taxes, the estimated total aggregate value of the South Carolina promotion campaign for consumers is \$68 million per year (\$40 per household). This figure was derived using the estimated aggregate effect of the campaign on consumers’ utility (\$88 million per year; \$52 per household) and the estimated aggregate welfare effect of the price increase (-\$20.4 million per year; -\$12 per household) and illustrates the net benefits to consumers.

Summary and Conclusions

The main objective of this study was to analyze the effect of advertising on social welfare in a perfectly competitive market where the level of advertising is chosen by a social planner. We propose an empirical approach to differentiate and measure the welfare effects of advertising under alternative economic conceptualizations of advertising using contingent valuation

procedures. The proposed framework was used to estimate the consumer welfare impact of a government sponsored regional “buy local” promotion program in the state of South Carolina. Finally, we empirically demonstrate that two plausible alternative campaign financing vehicles (a new tax versus the reallocation of current taxes) impact the net social welfare estimate.

The conceptual framework indicates that the complementary and the informative types of advertising can be analyzed within the same theoretical construct. The welfare effects of the complementary type of advertising are due to the effect on utility and the effect of the price change, whereas for the informative type the welfare effect is limited to the price effect. The theoretical model revealed that, in a perfectly competitive market, social planner sponsored advertising that increases the equilibrium price of the advertised good can increase society’s welfare if the effect of advertising in consumers’ utility is higher than the consumer welfare reducing price effect (producer welfare is increased by the same amount as the reduction in consumer welfare). Therefore, if the marginal effect of advertising on utility is zero, then government sponsored advertising is just a welfare transfer mechanism from consumers to producers.

The empirical application focuses on the South Carolina “buy local” food products campaign. The findings suggest that this government sponsored advertising campaign is complementary in nature as it results in both a utility and a price effect. Furthermore, the estimated welfare increasing utility effect is significantly higher than the estimated welfare reducing price effect, suggesting that the campaign results in a net increase in consumer welfare. The actual value of the welfare effect is sensitive to the use of a new tax or reallocation of taxes as the payment vehicle used for eliciting campaign

WTP values. Specifically, *WTP* values estimated using new taxes were lower than those obtained using reallocation of current taxes.

Using tax reallocation as a payment vehicle, (the actual campaign funding mechanism) the estimated total net aggregate value of the South Carolina promotion campaign for consumers is \$68 million per year (\$40 per household). This value is derived as the difference between the estimated aggregate effect on consumer utility of \$88 million per year (\$52 per household) and the aggregate welfare loss due to the campaign induced price increase of -\$20.4 million per year (-\$12 per household) and illustrates the net benefits to consumers.

In a prior study of the South Carolina promotion campaign, the increase in producer welfare was estimated to be \$22 million per year (Carpio and Isengildina-Massa 2010). This welfare measure was calculated as the change in producer surplus using estimates of the supply and demand elasticities and a measure of the potential shift in the demand curve due to advertising. This figure is very close to the aggregate consumers' welfare reduction of \$20.4 million due to the effect of the price increase estimated in this study (theoretically, they should be equivalent). Thus the total impact of the campaign on both consumer and producer welfare is estimated at about \$88 million per year.

To the best of our knowledge, this is the first study that has formally attempted to disentangle the alternative economic characterizations of advertising in order to measure its impact on consumer welfare. The methodology developed and presented in this paper should prove useful in evaluating different types of government sponsored advertising campaigns.

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Table 2.1. Description and Summary Statistics of Key Survey Variables (N=317)

Variable Name	Category	Category Proportion	Mean	Standard Deviation
Age	18 to 25 years	0.32	56.22	13.83
	25 to 45 years	22.71		
	45 to 60 years	34.70		
	Over 60 years	42.27		
Household Income	<\$25K	17.67	57.78	33.67
	\$25K to \$50K	31.86		
	\$50K to \$75K	19.56		
	\$75K to \$100K	17.03		
	>\$100K	13.88		
Gender	1=Female	43.53	0.44	0.50
	0=Male	56.47		
Number of members in the household	1	19.74	2.46	1.26
	2	44.01		
	3	17.15		
	4	13.27		
	>4	3.56		
Number of years living in SC ^a	0= \leq 10 years	21.50	0.82	0.38
	1= $>$ 10 years	82.01		
Working in agriculture	1=yes	5.36	0.05	0.23
	0=no	94.64		
Motivation to buy SC products	0=quality or price	24.60	0.25	0.43
	1=support SC or SC farmers	73.04		
Perception about the quality of SC products relative to out of state products	1= Better	37.85	0.38	0.49
	0= Same or Worse	62.15		
Aware of the campaign	1=yes	43.53	0.44	0.50
	0=no	56.47		
Support the campaign	1=yes	83.60	0.84	0.37
	0=no	16.40		

^aSouth Carolina.

Table 2.2. Responses to dichotomous questions (N=317)

First Discrete Choice Question	Yes	No		
Percentage of Respondents (%)	45.74	54.25		
Average Bid (\$)	50.00	31.03		
Second Discrete Choice Question	Yes	No	Yes	No
Percentage of Respondents (%)	51.72	48.28	31.40	68.60
Average Bid (\$)	39.87	80.57	21.40	23.67

Table 2.3. Estimation Results of the Willingness to Pay Model for the South Carolina Promotion Campaign

Variable	Parameter ^a
Mean	
Intercept	7.49 (21.52)
Payment Instrument (0=New Tax, 1=Current Tax)	29.10*** (8.39)
Aware of the SC Promotion Campaign (Yes=1, No=0)	10.90* (7.82)
Percentage Increase in Price due to Campaign (0%=0, 3% and 6%=1)	-11.86* (7.81)
Household Income (\$10,000/year)	2.10* (1.37)
Gender (0=Male, 1=Female)	13.04** (7.70)
Age (years)	(-0.12) (0.31)
Standard Deviation (σ)	
Intercept	3.56*** (0.17)
Payment Instrument (0=New Tax, 1=Current Tax)	0.45*** (0.14)
Household income (\$10,000/year)	0.06*** (0.02)
Log-likelihood	-473.05
Sample size	317

^a Heteroskedasticity was incorporated using the multiplicative form $\sigma = \exp(\alpha'z)$, where z is the vector of explanatory variables and α is a parameter vector. Numbers in parenthesis are asymptotic standard errors. One asterisk (*) indicates significance at the 10% level, two asterisks (**) indicate significance at the 5% level, and three asterisks (***) indicate significance at the 1% level.

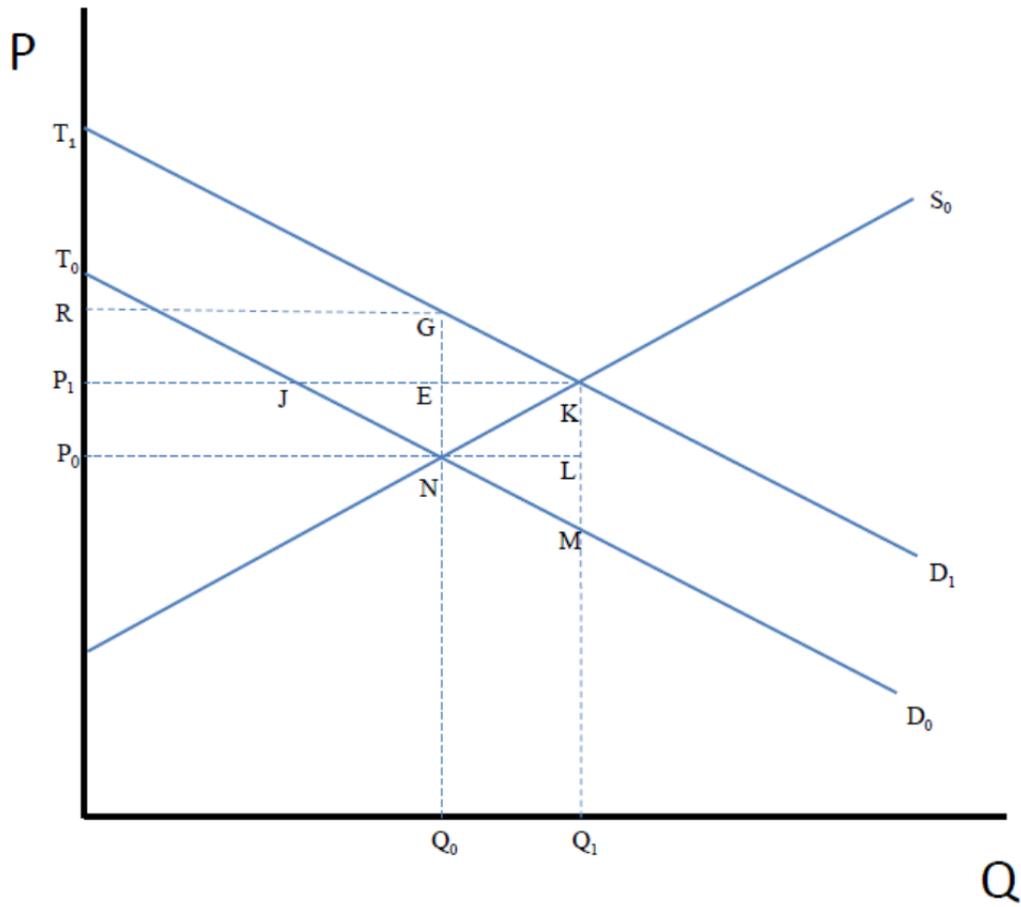


Figure 2.1. Consumer Welfare Impacts of Advertising

Appendix 2.1

Contingent Valuation Questions

Introductory questions

1. A few years ago the South Carolina Department of Agriculture launched an advertising campaign called “Nothing’s Fresher, Nothing’s Finer” to promote the quality of fruits, meats and vegetables produced in South Carolina. Are you aware of this promotion campaign?

Yes No

2. The goal of the South Carolina “Nothing’s Fresher, Nothing’s Finer” campaign is to increase consumer demand for the state grown agricultural products. Campaign activities include the design and distribution of labels and signage for “Certified South Carolina Grown” products; the advertisement of South Carolina grown products on Television, Radio, Magazines, Newspapers and Billboards; and the “Fresh on the Menu” program displays at local restaurants. Similar campaigns are run by most other states in the country.

Do you support this campaign?

Yes No

Version A: Current Taxes

3. Since its launch in 2007, the campaign has been funded using approximately 1.3 million dollars per year of State taxes. However, the financial support for continuing the Nothing's Fresher, Nothing's Finer campaign is now uncertain.

One option is to continue funding the campaign with State tax dollars. However, as you know, paying for the campaign redirects money from other public services, such as roads, bridges, schools, parks, police protection, health care, etc.

If the Nothing's Fresher, Nothing's Finer program were placed on the next ballot, would you vote for the program if it required to **continue spending \$5** per year of your household taxes to fund the campaign, knowing that due to the increased consumer demand as a result of the campaign, South Carolina grown product prices will likely increase by about **3%**?

- Yes
- No

Version B: New Taxes

3. Since its launch in 2007, the campaign has been funded using approximately 1.3 million dollars per year of State taxes. However, the financial support for continuing the Nothing's Fresher, Nothing's Finer campaign is now uncertain.

One option for funding the campaign is to introduce a special tax for this specific purpose. Obviously, if you choose to pay this tax you will have less money to spend on other goods and services.

If the Nothing's Fresher, Nothing's Finer program were placed on the next ballot, would you vote for the program if the **new special tax** needed to fund the program cost your household **\$5** per year knowing also that due to the increased consumer demand as a result of the campaign, South Carolina grown product prices will likely increase by about **3%**?

- Yes
- No

Chapter 3.

How Restaurants Value Various Components of a Regional Promotion Campaign?

Introduction

Government funded advertising campaigns play an important role in agricultural and food policy around the world. In the United States, regional promotion programs have grown rapidly since the mid-1990s. The number of states conducting such programs went up from 23 to 43 between 1995 and 2006 (Patterson 2006) and by 2010 programs were in place in all 50 states (Onken and Bernard 2010). Previous studies evaluating regional promotion campaigns provide mixed evidence about campaign effectiveness (e.g. Carpio and Isengildina-Massa 2010, Govindasamy 2003, Patterson et al. 1999). Govindasamy (2003) found that the *Jersey Fresh* program provided about \$32 in return for fruit and vegetable growers for every dollar invested. In other words, \$1.16 million campaign generated \$36.6 million in sales for New Jersey produce growers and a total economic impact in the state economy of \$63.2 million in 2000. Carpio and Isengildina-Massa (2010) estimated that the *SC Locally Grown* campaign generated a return on investment of 618% or a benefit-cost (producers benefit / State government expenses) ratio of 6.18 in 2007. In contrast, Patterson (1999) found little evidence of an increase in local product sales due to the *Arizona Grown* campaign.

One of the limitations of the previous studies is their exclusive focus on the benefits received by farmers. Other potential campaign beneficiaries such as consumers, local restaurants and farmers markets have been largely ignored in the previous literature. Furthermore, regional promotion campaigns are typically analyzed as a whole providing

little guidance to policy makers about relative benefits of various campaign components. Given these limitations, the goal of this study is to examine how various components of the SC locally grown campaign are valued by a generally overlooked segment of local restaurants.

The *South Carolina Locally Grown* campaign was launched on May 22, 2007 and has been financed by special appropriations from the state legislature. Average annual expenditures in the campaign are about \$1.3 million. The goal of the South Carolina “buy local” campaign is to increase consumer demand for the state produced food products (<http://www.certifiedscgrown.com>). Original campaign components included the design and distribution of labels and signage for “Certified South Carolina Grown” products and the advertisement of South Carolina food products on television, radio, magazines, newspapers and billboards. The “Fresh on the Menu” component focusing on local restaurants was added in February 2008. Participating restaurants are supposed to provide a menu that includes at least twenty-five percent Certified South Carolina Grown products and fresh fruits, vegetables, meats and seafood as available in season. Participation is free of charge and results in benefits from South Carolina Department of Agriculture’s multimedia advertising and branding efforts. Initially 180 restaurants signed up for the “Fresh on the Menu” program in 2008, and 168 more restaurants became campaign members over the past four years.

This study uses choice-based conjoint analysis. The *Certified SC Grown* campaign is considered the “good” being valued and each campaign component is treated as an attribute of this good. Choice experiments are used to elicit restaurant preferences which allow us to estimate restaurants’ willingness to pay (WTP) (i.e., the economic

value) for various campaign components. The findings of this study will help policy makers and marketers determine which campaign components are most effective and will guide investment decisions and efficient fund allocation for locally grown campaigns. This issue becomes particularly important in the environment of decreasing state and federal funding. In this environment it becomes increasingly important to have a framework and estimates that will allow to measure and discern projects that are likely to make the most impact.

Data

The data for this study was generated from mail and internet based surveys of the entire population of 288 restaurants participating in the S.C. "Fresh on the Menu." The survey was conducted in during the summer of 2010. Restaurants with valid email addresses were sent a link to an on-line (Qualtrics) copy of the survey, while those who had no available email address or did not fill out online surveys were sent the survey by mail. The survey generated 63 observations for a response rate of about 22%.

Table 3.1 (p. 68) presents selected descriptive statistics for the participating restaurants. Almost all (92%) participating restaurants were locally owned. Most of the participating restaurants featured fine dining (29%) and American (22%) cuisine. About half of the restaurants had over \$500,000 in annual sales. An average participating restaurant manager was 47 years old, male, with a college degree. We also learned (full survey results shown in Appendix A, p. 124) that the most common motivation to participate in the campaign was to support SC economy (35%) (similar to a finding for consumers reported by Carpio and Isengildina-Massa, 2009), followed by a desire to

increase sales by attracting customers interested in SC products (25%), and a desire to improve the quality of ingredients since SC produces better quality products (21%). Most respondents found out about the campaign through a direct contact from the South Carolina Department of Agriculture (27%), followed by the “Fresh on the Menu” website (16%), and food service shows (14%).

Perceived impacts of restaurant participation in the SC “Fresh on the Menu” campaign are described in Table 3.2 (p. 69). About 54% of the restaurants reported that their costs of participation were less than \$50. The costs are low because the restaurants are provided with promotional materials free of charge by the SC Department of Agriculture. While 38% of respondents believe that the campaign did not affect their costs of purchasing ingredients, 37% indicated that they thought the costs increased by an average of 18%.¹ On the other hand, 38% of respondents reported that their sales increased during the last year due to campaign by an average of 16.2%. About 32% of respondents indicated that the number of clientele visiting their restaurant increased by an average of about 16.4%. This finding suggests that most of the increase in restaurant sales resulted from additional clientele rather than higher prices. While most of the restaurants (38%) reported that the campaign did not affect their profitability, 22% indicated that their profitability increased by about 15.2%. Thus, the average increase in profitability across all restaurants was 2.8%. Figure 3.1 (p. 72) shows that from 11 to 19% of the restaurants with sales over \$100,000 reported increase in profitability, while 50% of smaller restaurants (1,000 to 9,999) and 100% of restaurants with \$50,000 to \$99,999 reported increase in profitability. However, due to a small number of

¹ Since responses were given in the form of intervals, the mean (conditional on the number of valid responses) was calculated by applying the parametric approach following Stewart (1983), Bhat (1994), and Zapata et al., (2011).

observations in these categories, it is hard to argue that the campaign benefits small restaurants more than the larger ones. If the change in profitability is used as an indication of the overall campaign value for restaurants, an average increase in profitability of 2.8% combined with the average annual sales of \$385,080 and an assumed 5% profit margin, suggests an average value of about \$539 per restaurant per year, or a total value of \$155,232 per year. The next section describes how we measure the restaurants valuation of separate campaign components.

Conceptual Framework

Choice Experiments

Choice-based conjoint analysis or choice experiments (CEs) have been employed in the fields of marketing, transportation, and psychology since the late 1980s (Batsell and Louviere, 1991; Louviere, 1988; Batsell and Louviere, 1991; Hensher, 2005). In recent years, CEs have played a critical role in estimating economic values for a technically divisible set of attributes of an environmental goods (e.g. Adamowicz et al, 1998; Brownstone and Train, 1998). CEs are firmly rooted in the economic theory that the decision making process can be seen as a comparison of two indirect utility functions and can be analyzed within the random utility framework (McFadden, 1974). The CEs allow us to calculate the willingness to pay for each component of the campaign by including cost as one of the attributes (Holmes and Adamowicz, 2003).

Stated-preference choice experiments were used in this study to elicit restaurants' valuation of various components of the *Certified SC Grown* campaign. The choice experiments' design incorporated four attributes corresponding to different components

of the campaign: (1) Labeling -- labels for Certified SC Grown products; (2) Point of Purchase Signage -- Certified SC Grown signs at food buying locations: supermarkets, farmers markets, and roadside stands; (3) Multimedia Advertising -- television, radio, magazine, newspaper, and billboard advertisements promoting SC grown products; (4) "Fresh on the Menu" program -- focused on promoting local restaurants preparing and selling menu items that include Certified SC Grown products in season. Each choice was also associated with one of two payment methods: membership fee and donation. These options were selected because they are the most widely used methods of funding public and private programs that promote locally grown products. The amount of payment was added so that the willingness to pay for each campaign component could be calculated. The levels chosen for the cost attribute were important because they were likely to be highly influential in determining the maximum and minimum WTP values elicited. A pilot study to find out the correct bid vector (following Ratcliffe, 2000) was conducted. The finalized payment levels were \$20, \$50, \$100, \$150, or \$200. Figure 3.2 (p. 72) shows an example of one of the choice experiments.

Each respondent was offered 6 scenarios with binary choices, followed by trinary choices. In each case, the respondent was first asked to either choose campaign A or campaign B, and then asked to choose from campaign A, B, or no campaign at all. In this case, adding the choice of no campaign at all would allow for the possibility that when individuals were presented with campaign alternatives that were not satisfactory to them, they would respond by choosing no campaign. Having the third option made the experiment design fit an actual market situation without a "forced" choice (Louviere, Hensher, and Swait, 2000). For each campaign choice, respondents were asked to choose

a campaign in which each of the four components (Labeling, Point of Purchase Signage, Multimedia Advertising, and “Fresh on the Menu”) was either included or not included, which was associated with one of the two methods of payment and one of 5 levels of payment, resulting in a total of 160 ($2*2*2*2*2*5$) possible combinations, so a full factorial design consisted of 25600 ($160*160$) possible CE versions. Although full factorial designs contained all possible combination of attributes and different attribute levels, having such a large number of CEs within this study was not feasible. Hence, a fractional factorial design was applied. Based on a 2^5*5 orthogonal main-effects design, the 18 most efficient CEs (2 campaigns for each CE) were chosen by comparing the D-Efficiency of each combination. However, having 18 CEs within a single survey was still deemed excessive. Therefore, the design was blocked into three versions of the questionnaire with six CEs presented to each respondent.

Econometric Model

The econometric choice model used in this study is the random parameter/mixed logit model (Revelt and Train, 1998). The mixed logit model allows efficient estimation of repeated choices by the same respondent within Choice-based conjoint experiments. Moreover, this model relaxes the restrictive assumptions of the multinomial logit model (Revelt and Train 1998).

Derivations of logit models are traditionally based on consumer random utility theory. However, since in this study the CEs involve firms, the underlying maximizing function is profits. The profit that each restaurant n obtains from alternative i in choice situation t is assumed to be $P_{nit} = \beta_n' x_{nit} + \varepsilon_{nit}$, where x_{nik} is component k of campaign i

selected by restaurant n . The coefficient vector β_n is unobserved for each n and varies with density $f(\beta_n/\theta^*)$, in which θ^* are the true parameters of each distribution and ε_{nit} is an unobserved random term that is distributed iid extreme value, independent of β_n and x_{nit} . Denote $i(n,t)$ as the campaign that restaurant n chose in each choice occasion t , so conditional on β_n , the probability of restaurant n 's observed sequence of choices is:

$$(3.1) \quad S_n(\beta_n) = \prod_t L_{ni(n,t)t}(\beta_n)$$

Therefore, the unconditional probability of the sequence of choice is:

$$(3.2) \quad Q_n(\theta) = \int S_n(\beta_n) f(\beta_n | \theta) d\beta_n$$

The parameter vector β_n is estimated by the log-likelihood function:

$$(3.3) \quad \ln L(\theta) = \sum_{n=1}^N \ln Q_n(\theta).$$

Because the integral in (3.2) cannot be calculated analytically, estimation is carried out using simulated maximum likelihood procedure (Revelt and Train, 1998).

The variables included in the vector x_{nit} are campaign component variables, method of payment and the cost of the campaign. Campaign component variables describing Labeling (LABEL), Point of Purchase Signage (SIGNAGE), Multimedia Advertising (MULTI), and “Fresh on the Menu” (FOTM) were introduced as dummy variables with the value of one if the component was included in the campaign, and zero otherwise. The two methods of payment (MEM) were also treated as dummy variables, where the payment by membership took the value of one, and the donation of zero. Estimation of the mixed logit model requires assumptions of the distributions of the parameters corresponding to LABEL, SIGNAGE, MULTI, FOTM, MEM and COST. The level of payment (COST) coefficient was specified to be fixed to facilitate the

estimation of the distribution of WTPs (Train, 1998; Train, 2003; Hensher, Shore and Train, 2004) while the other coefficients were allowed to vary in the mixed logit model. All the non-price coefficients were initially specified to be normally distributed, which allowed coefficients of both signs. Other studies (e.g., Revelt, 1999) have argued that a truncated normal distribution was a better assumption for dummy variable parameters. However, this specification resulted in convergence difficulties and/or unreasonably high estimates for the standard deviations of the distributions; therefore the normal distribution assumption was used in the final specification of the mixed logit model. An intercept was included in the model to estimate the change in profit associated with choosing the option of no campaign at all. Coefficients were estimated by simulated maximum likelihood procedure, where simulation was performed using one thousand random draws for each respondent. Maximization of the log-likelihood functions was performed using MATLAB.

Results

Table 3.3 (p. 71) shows the estimation results for the mixed logit model with three choices. The estimated mean coefficients of Labeling, Multimedia Advertising, and “Fresh on the Menu” were significantly different from zero at the 95% level. For the campaign component variables, this indicates that on average each of these components is positively valued by participating restaurants. The economic value of each component is measured by the average willingness to pay (WTP), which is computed by dividing the coefficient for a desired variable by the marginal utility of money (-1 times the coefficient for the COST attribute). For instance, the value of having labeling in the

Certified SC Grown campaign was calculated to be $-0.9892/(-0.0079)$ resulting in a WTP for labeling of \$125.22/year. The results reveal that "Fresh on the Menu" component has the highest average WTP across restaurants of \$212.53/year. This finding is not surprising given that restaurants are the most direct beneficiaries of this campaign component. The availability of multimedia advertising is also highly valued (average WTP of \$195.23/year). Multimedia advertising sends positive messages about locally grown products to consumers with the goal of increasing consumer demand that would benefit all campaign participants. A relatively high WTP by restaurants for this campaign component supports the current campaign design where the majority of expenses are devoted to multimedia advertising. On the other hand, restaurants usually do not benefit directly from the Point of Purchase Signage, which explains getting a non-significant mean coefficient for this variable. The negative mean coefficient for MEM indicates that restaurants prefer to participate in the *Certified SC Grown* campaign by donating annually instead of paying a membership fee. These findings suggest that participating restaurants would be willing to donate on average \$532.98 annually to support a campaign that includes all four components (which is the current design of the campaign). This figure is consistent with the estimated average increase in profitability of \$539 calculated in the data section.

All standard deviation coefficients were also significantly different from zero at the 95% level. These coefficients provide information on the share of the population that places a positive or negative value toward each attribute. For instance, the distribution of the coefficient of FOTM has an estimated mean of 1.6790 and estimated standard deviation of 2.5249 suggesting that 74% of respondents have a positive valuation of this

component within the *Certified SC Grown* campaign. Based on this interpretation, our findings indicate that 75% of respondents have a positive willingness to pay for the multimedia component, and 71% of respondents have a positive willingness to pay for the labeling component of the *Certified SC Grown* campaign.

Summary and Conclusions

The objective of this study was to estimate economic values for the components of the *Certified SC Grown* campaign from the perspective of participating restaurants. A stated-preference choice experiment was conducted as part of the restaurant survey in order to estimate the average willingness to pay for each component using the mixed logit model. Our findings indicate that three out of the four campaign's existing components-- Labeling, Multimedia Advertising, and "Fresh on the Menu" have a significant positive economic value for restaurants participating in the program. The participating restaurants would be willing to pay on average \$125.22, \$195.23, and \$212.53 per year for having those three components, respectively. We also found that restaurants prefer to participate in the *Certified SC Grown* campaign by donating annually instead of paying a membership fee. These results suggest that participating restaurants would be willing to donate on average \$532.98 annually to support a campaign that includes all four components (which is the current design of the campaign). This figure is consistent with the estimated average increase in profitability of \$539.

It is important to understand the economic value of the separate components of the *Certified SC Grown* Campaign for Carolina Department of Agriculture (SCDA) in order to evaluate the relative benefits of various campaign components. Furthermore,

this study estimates the impact of the campaign on a generally overlooked segment of restaurants. However, it is important to keep in mind that our results with respect to the relative value of the campaign components reflect the view of participating restaurants only. The framework and survey instruments developed in this study can be applied to other program participants and beneficiaries (i.e., farmers, farmer's market vendors, grocery stores, etc.) in order to determine the value of the campaign to those groups.

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Table 3.1 Summary Statistics Describing the Characteristics of Restaurant Participating in the SC campaign.

Question	Category	Category responses	Category Proportion	Mean	Standard Deviation
How would you best describe the focus/image of your restaurant?	Fine-dining	18	28.60%		
	Fast-Food	1	1.60%		
	Family-oriented	7	11.10%		
	Bar and Restaurant	3	4.80%		
	International Cuisine	2	3.20%		
	American Cuisine	14	22.20%		
	Health-Conscious	4	6.30%		
	Other	11	17.50%		
Please describe the size of your restaurant business in 2009 in terms of total annual sales	\$1,000-\$9,999	2	3.42%	\$385,080	\$22,860
	\$10,000-\$49,999				
	\$50,000-\$99,999	3	5.13%		
	\$100,000-\$249,000	9	15.27%		
	\$250,000-\$499,000	14	23.71%		
How would you best describe the ownership of your restaurant?	\$500,000 and over	31	52.54%		
	Locally owned	58	93.59%		
Age	Franchise	4	6.40%		
	18-20 years			47.0321	1.4742 years
	21-29 years	3	5.40%	years	
	31-39 years	11	19.69%		
	41-49 years	19	33.98%		
	51-59 years	16	28.58%		
	61-69 years	6	10.69%		
Gender	70 years or more	1	1.80%		
	Male	34	54.00%		
Highest Level of Education	Female	20	31.70%		
	High School Diploma (including GED)	13	20.60%		
	College Degree	30	47.60%		
	Post-Graduate or Professional Degree	13	20.60%		

Table 3.2 Summary Statistics Describing the Effects of Restaurant Participation in the *Certified SC Grown* campaign.

Question	Category	Category responses	Category Proportion	Mean	Standard Deviation
Please describe the costs of your participation in the SC Fresh on the Menu campaign in the last year.	\$0-\$49	34	54.00%	\$129.42	\$21.49
	\$50-\$99	8	12.70%		
	\$100-\$249	7	11.10%		
	\$250-\$499	7	11.10%		
	\$500 and over	5	7.90%		
How do you think the SC Fresh on the Menu campaign affected your costs of purchasing ingredients and food preparation in the last year?	Increase	23	36.50%		
	Decrease	7	11.10%		
	Unsure	9	14.30%		
	No change	24	38.10%		
What percentage increase in the costs of purchasing ingredients and food preparation?	0-10%	7	12.07%	17.97%*	4.31%
	11-20%	8	13.79%		
	21-30%	2	3.45%		
	41-50%	1	1.72%		
	81-90%	1	1.72%		
	No Response	39	67.24%		
What percentage decrease in the costs of purchasing ingredients and food preparation?	0-10%	5	8.62%	9.56%*	2.88%
	11-20%	1	1.72%		
	21-30%	1	1.72%		
	No Response	51	87.93%		
How do you think the SC Fresh on the Menu campaign affected your total sales during the last year?	Increase	24	38.10%		
	Decrease	0	0.00%		
	Unsure	24	38.10%		
	No change	15	23.80%		
What percentage increase in total sales?	0-10%	10	19.61%	16.19%*	3.11%
	11-20%	8	15.69%		
	21-30%	2	3.92%		
	31-40%	1	1.96%		
	41-50%	1	1.96%		
	61-70%	1	1.96%		
	No Response	28	54.90%		

Note: Means with * are conditional on valid responses.

Table 3.2 (continued). Summary Statistics Describing the Effects of Restaurant Participation in the *Certified SC Grown* campaign.

Question	Category	Category responses	Category Proportion	Mean	Standard Deviation
How do you think the SC Fresh on the Menu campaign affected the number of clientele visiting your restaurant in the last year?	Increase	20	31.70%		
	Decrease	0	0.00%		
	Unsure	26	41.30%		
	No change	17	27.00%		
What percentage increase in the number of clientele?	0-10%	7	14%	16.41%*	2.92%
	11-20%	7	14%		
	21-30%	3	6%		
	31-40%	1	2%		
	51-60%	1	2%		
	No Response	31	62%		
How do you think the SC Fresh on the Menu campaign affected the profitability of your restaurant in the last year?	Increase	14	22.20%		
	Decrease	2	3.20%		
	Unsure	21	33.30%		
	No change	24	38.10%		
What percentage increase in profitability?	0-10%	8	14.04%	15.2%*	4.94%
	11-20%	1	1.75%		
	21-30%	1	1.75%		
	41-50%	1	1.75%		
	51-60%	1	1.75%		
	No Response	45	78.95%		
What percentage decrease in profitability?	0-10%	2	3.51%		
	No Response	55	96.49%		

Note: Means with * are conditional on valid responses.

Table 3.3. Mixed Logit Estimates for the Three Choice Model.

Attributes	Categories	Estimate
Labeling	Mean Coefficient	0.9892** (0.4060)
	Standard Deviation Coefficient	1.8018 *** (0.4796)
	Willingness to Pay	\$125.22
Point of Purchase Signage	Mean Coefficient	0.4284 (0.2868)
	Standard Deviation Coefficient	0.8068 ** (0.3717)
	Willingness to Pay	\$54.23
Multimedia Advertising	Mean Coefficient	1.5423 *** (0.4203)
	Standard Deviation Coefficient	2.2822 *** (0.5163)
	Willingness to Pay	\$195.23
“Fresh on the Menu”	Mean Coefficient	1.6790 *** (0.4650)
	Standard Deviation Coefficient	2.5249 *** (0.5514)
	Willingness to Pay	\$212.53
Membership	Mean Coefficient	-0.6571** (0.3012)
	Standard Deviation Coefficient	0.9471** (0.3930)
	Willingness to Pay	-\$83.18
Level of Payment	Mean Coefficient	-0.0079*** (0.0024)
Log Likelihood		-269.7988

Note: Standard errors are in parentheses. Single, double, and triple asterisks (*, **, ***) denote statistical significance at 10%, 5%, and 1% levels, respectively.

Chapter 4. The Impact of the Locally Grown Campaign on the South Carolina Economy Due to Increased Sales at Farmers Market and Restaurants

Introduction

The number of farmers' markets has increased significantly over the last sixteen years, from 2,410 in 1996 to 4,385 in 2006 and to 7,175 in 2011 (USDA-AMS, 2011). Thus, farmers have the potential for gaining a greater share of the consumer market. Presumably, local and regional economies benefit from an enhanced retention of local dollars. Several studies have examined the economic impact of farmers' markets on local and state economies. Regional input-output models have been used to quantify this contribution.

At the same time, buy local agriculture campaigns have become increasingly popular, especially at the state level (Onken and Bernard, 2010). Advocates see these advertising campaigns as another way to retain consumer dollars and enhance regional (primarily state) level economies as well as support local farmers. Despite the argument, we know of only one study (Govindasamy et al., 2004) that has examined the actual direct and indirect economic impact of such a campaign.¹ The authors claim that the \$1.16 million spend on the Jersey Fresh program increased cash receipts for the state fruit and vegetable sector by \$36.6 million in 2003 dollars. Based on an input-output model of the New Jersey economy, the \$36.6 million lead to an additional \$26.6 million in the state economy as an indirect impact.

¹ One study (Moore School of Business, 2010) provides estimates of the potential (but not the actual) economic impact of the Certified South Carolina Grown Campaign based on differences between estimates of actual level of sales and their estimate of maximum potential market capture (as measured by the maximum of undisclosed regional purchase coefficients for seven agricultural commodities across state-level IMPLAN output-output models for Georgia, South Carolina, and North Carolina).

Like most impact studies, such efforts have not accounted for the opportunity cost of money spent at farmers' markets or in other venues. That is, estimates of economic impacts are gross as opposed to net impacts. We discuss the application of a simple method, (originally employed in Hughes et al. (2008)), where inferences can be drawn concerning the net impact of such market activity on local and regional economies. This approach is used in examining the impact of farmers' markets on the South Carolina economy in combination with producer and consumer survey data, Agricultural Research Management Survey (ARMS) data at the national level, and an IMPLAN (Impact Analysis for Planning)-based Social Accounting Matrix model (Minnesota IMPLAN Group, Inc.). As a key component of this research, we evaluate the direct and indirect economic impact of the Certified South Carolina Grown Campaign as transmitted through farmers markets and restaurants in the state.

We first discuss the construction of the IMPLAN-based Social Accounting Matrix (SAM) model of the South Carolina economy. The approach used in surveying producers and relevant survey results are then examined. A discussion follows concerning how the survey data was integrated into our farmers' market impact scenario including the impact of the Certified South Carolina Grown Campaign. Also discussed is how the opportunity cost of such spending was estimated. Impact results are then reported for the farmers' market impact itself, for the opportunity cost impact analysis, and for the net impact analysis. We also report results for the impact of the program on the South Carolina economy through increased sales at restaurants. Finally, study results are summarized and conclusions are drawn.

Methods

Economic Model of South Carolina

Input-output (I-O) models are the traditional vehicle used to examine the impact of a particular economic sector on the rest of that economy. I-O models examine the market flow of product between industries, sales by industries to households and other final consumers, and industry use of local labor and capital. Such models can be very detailed, consisting of several hundred industries, and have been used extensively to evaluate tourism-based economic activity (e.g., Miller and Blair 2009). A Social Accounting Matrix (SAM) provides a detailed picture of the economy but in a more complete fashion than an I-O model by explicitly accounting for all market and nonmarket (such as government welfare payments to households) income and resource flows. SAMs expand on I-O models by including local households, which are often divided into income categories. As a result, SAMs can track a given industry's impact on local household income distribution. That is, a properly constructed SAM provides a picture of local income distribution and how that distribution and the nature of local jobs may change as sectoral economic activity changes in level and composition.

The SAM used here is based on the approach outlined by Holland and Wyeth (1993) and follows the approach used in Hughes and Shields (2007) with the model formally defined as follows.

$$4.1 \quad Q = \begin{bmatrix} A & H \\ C & I \end{bmatrix} V = \begin{bmatrix} X \\ Y \end{bmatrix},$$

where the matrix V contains the endogenous variables (as submatrices) X , output, and Y , income, and where V is pre-multiplied by the matrix Q , which is comprised by A —a submatrix of regional interindustry input coefficients, H (a submatrix of household regional consumption

coefficients—industry by income class), I (an identity submatrix), and C (a submatrix of industry direct payment to households by income class coefficients).

More formally, we can look at the multiplier matrix, M3, derived from the model as follows.

$$4.2 \quad M3 = \begin{bmatrix} [I - (I - A)^{-1} CH]^{-1} & 0 \\ 0 & [I - H(I - A)^{-1}]^{-1} \end{bmatrix}$$

The upper left-hand cell in the partitioned matrix provides a set of input-output multiplier coefficients (analogous to the Leontief Inverse, closed with respect to households in input-output analysis, but with additional terms involving C and H), while the lower right-hand cell provides a set of coefficients showing the final impacts on various household income classes. (In an input-output model, such detail is lacking.)

In this study we construct a SAM model of the South Carolina economy to evaluate the impact of farmers markets in particular and the Certified South Carolina Grown Campaign in general on overall economic activity. Our model is based on the 2009 IMPLAN (IMPact analysis for PLANning) modeling system (Minnesota IMPLAN Group, Inc. 2000). IMPLAN is a commercial I-O modeling system that relies on secondary data, such as employment, and the assumption that input use and market distribution in the regional economy is similar to that found in the national economy. IMPLAN-based models also have hundreds of industries; in this study, these sectors were aggregated into 47 industries.

For reasons detailed in Appendix 4.1, we determined that the standard IMPLAN model was not appropriate for analyzing farmers markets or Certified South Carolina Grown Campaign economic impacts (i.e., it is not based on an appropriate C matrix). We create our SAM (that is, develop a fully specified C matrix) by estimating the relationship between industry and household income distribution using data drawn from the 2009 American Community Survey Public Use Microdata Series (PUMS) dataset (IPUMSUSA 2011, Ruggles, et al., 2010,

Alexander and Sobek 2005). We use the PUMS dataset in part because it places income on a household as opposed to individual basis.

Specifically, the PUMS dataset provides the advantage of linking earnings by individual household members by industry where data is provided for earned income for each household wage earner by industry. Also provided is total money income for that household unit. Based on this information, a household money income by industry dataset was formed. Using a two wage earning household as an example, assume one household wage earner worked in a manufacturing sector, such as automotive parts manufacture, while the other household wage earner worked in a tourism-oriented service sector, such as food and drinking establishments. For their particular household money income class, the household would have two row entries for their respective industries. For each household observation, a conversion was then made to households by personal income class, as described in Appendix 4.1 (primarily by accounting for the value of benefits, p. 97). The relative values (i.e., normalized based on industry column totals) in the matrix were used to distribute earned income for a given set of appropriate IMPLAN-based industries.²

We also made numerous changes to the basic production portion of the SAM (i.e., the Interindustry portion or matrix C) to reflect the structure of the typical farmer who sell at farmers markets. Our research and result conducted elsewhere (Varner and Otto, 2008) indicates that small farmers tend to predominate at farmers market in general and in direct selling marketing in particular. It is also likely that small versus larger farms have varying patterns of purchases due to difference in technology and profitability primarily because of differences in economies of

² PUMS data is based on an industry scheme that is very close in nature to the North American Industry Classification System (NAICS) at the three-digit level. We bridged the PUMS industry scheme to NAICS and then assigned to IMPLAN sector based on the NAICS-IMPLAN bridging scheme provided in IMPLAN documentation.

size (Dimitri et al., 2005). Using Agricultural Resource Management Survey (ARMS) data for 2009 at the national level (Economic Research Service, 2011), farms were divided into three categories in part based on size, small (less than \$10,000 in sales), medium (\$10,000 through \$500,000 in sales), or large (greater than 500,000 in sales). Pairwise t-test for total value of sales normalized coefficients (i.e., column elements in the Leontief Production function values) was used to determine the division by farm size. Farms were also divided into livestock and crop producers across the three size categories resulting in six farm categories.

Key coefficients were also altered in each of the six agricultural categories to better represent agricultural production costs by farm size including net returns to production, expenditures shares for use of purchased farm labor, farm chemicals, purchased feeds (livestock producers only), machine hire and custom work, utilities, fuel and oil, fertilizer and other chemicals, and maintenance and repair. The result was a set of production expenditures and net returns that better reflected the production practices and hence the in-state economic impact of South Carolina farmers who sell at farmers markets. We also divided the direct contribution of farms to the employment base for each of our six types of farms, but used published Census of Agricultural data for the state of South Carolina (2009) to make these divisions.

Many agricultural jobs are part-time jobs, especially those generated by small farms. To properly compare our impact scenarios, we converted employment impact results to full-time employment equivalents. For all sectors of the economy except production agriculture, estimates of the number of part-time workers and their number of hours worked based on Bureau of Labor Statistics data (2011b) were used to make the conversions. For the impact on agricultural employment under the opportunity cost scenario, data derived from the 2007 South Carolina Census of Agriculture was used to convert full- and part-time employment to full-time equivalents.

Formulation of Farmers Market Contribution to South Carolina Economy

To estimate the total (direct and indirect) impact of farmers markets to the South Carolina economy, it was first necessary to estimate the level of direct sales at such venues. We derived these estimates through a stratified survey of farmer market managers and farmer market vendors.

Selection of Sample of Farmers Markets

Our list of farmers markets originated with the Certified SC Grown database of such markets obtained from the South Carolina Department of Agriculture. The database listed contact information and locations for 107 farmers markets by county under the category of community-based farmers markets. However, we learned that in this database, each site of a weekly rotating market was listed as a separate market. After adding these sites to respective single markets, we calculated that 98 farmers markets were active in South Carolina in 2011.

Farmers' market sales (level and composition) were seen to be affected by length of operation, rural or urban location, and major region of the state. Accordingly, we stratified our population based on each of these variables. As would be expected for any retail operation, farmers' markets take time to mature and reach sales potential. To account for this fact, we grouped the markets into three categories based on years of operation, i.e., 1-3 years, 4-9 years, and 10 or more years. We also excluded markets that were in their first year of operation as they do not have a full year of sales to report. Data reported by US Department of Agriculture stated that consumer-oriented local food systems benefit from access to an urban population (Lohr and Diamond, 2011). At the same time, vendors (which are often found in rural areas) cannot be too far from market locations. Anecdotal evidence also suggests that farmers' markets in some rural

areas of South Carolina have tended to struggle. In view of that, markets were also stratified based on urban, less urban and rural locations. Urban counties include areas with a population of 50,000 or more meaning they contain at least one core city (or urbanized area) with a population of 50,000 or more, i.e., they form the basis of a Metropolitan Statistical Area (MSA) as defined by the U.S. Office of Management and Budget (2010). Less urban counties are counties that are part of a MSA because of the strength of their linkages with the MSA's urban core. Less urban counties are often suburban or even rural in nature, but are physically and economic proximate to a city. Rural counties are all areas not included in the urban and less urban category. Because production systems may vary between different regions of the state, we divided the state into three regions of roughly equal size, the upstate, midlands, and low country.³

We determined the age of the markets through email contact with the market manager. Out of the 107 markets listed and contacted numerous times, 60 market managers responded. After excluding first year markets, our sample consisted of 48 markets upon which we stratified the sample. Our goal was to survey 12-15 markets that represented our sample. We received responses from 12 farmers' markets, a 25% level of response which provided a sufficient base for drawing inferences.

Survey data

Two surveys were conducted within this study: a survey of farmer's market managers and a survey of farmer's market vendors. Paper surveys were distributed to the market managers

³ **Upstate:** Abbeville, Anderson, Cherokee, Chester, Edgefield, Greenville, Greenwood, Laurens, McCormick, Oconee, Pickens, Saluda, Spartanburg, Union, York. **Midlands:** Aiken, Bamberg, Barnwell, Calhoun, Chesterfield, Darlington, Fairfield, Kershaw, Lancaster, Lee, Lexington, Marlboro, Newberry, Orangeburg, Richland, Sumter. **Low Country:** Allendale, Beaufort, Berkeley, Charleston, Clarendon, Colleton, Dillon, Dorchester, Florence, Georgetown, Hampton, Horry, Jasper, Marion, Williamsburg.

with the help of local extension agents. Market managers filled out their surveys and distributed and collected the surveys from the vendors at their market. Managers described their farmer's markets size which averaged about 26 vendors and about \$61,000 in annual sales. Most markets (50%) operated once a week. Half of the managers indicated that the number of vendors that participate in their farmer's market increased by about 18% over the last three years. Most farmers' markets (75%) participate in the campaign by displaying campaign logos on stands. Only 25% go as far as applying logos on products. About half of the markets include campaign logos in their marketing materials. Given the fact that promotion materials are provided by the SC Department of Agriculture free of charge, most managers (67%) indicated that there were no costs associated with participation. Most respondents (83%) indicated that they were satisfied or very satisfied with the campaign. The biggest effect of the campaign observed by the managers has been the increase in customer traffic at the farmer's markets. The complete survey results are included in Appendix A (p. 105) of this report.

The survey of farmer's market vendors generated 77 observations. Vendors indicated that 44% of their annual farm sales come from farmer's markets. Other marketing venues these farmers used included restaurants and grocery stores. The average increase in annual sales attributed to the effect of SC grown campaign was 11.1%, which resulted from a 5.6% increase in prices and a 9.8% increase in quantity of products sold. In response to the campaign, vendors reported a 6.3% increase in production. Vendors attributed a 8.9% increase in their profits to the effects of the campaign. Not surprisingly, most vendors (49%) were satisfied or very satisfied with the campaign. The complete survey results are included in Appendix A of this report (p. 105).

Level of sales estimates

We arrived at our estimate of direct sales at farmers markets (\$7.321 million) through two different methods. The two methods yielded remarkably close estimate of the total sales variable. We first estimated the median number of farmer market vendors across all farmers markets in the state. Based on the 98 active farmers markets in South Carolina and estimated median value of sales per vendor (\$4,375) based on data provided in our survey of South Carolina vendors, we calculated the first estimate of the total value of sales across all farmers markets in South Carolina by multiplying the number of active farmers' markets times the median number of vendors times median sales per vendor provided to be \$7.533 million. We also estimated the distribution of sales across six size categories for farmers markets based on our survey of farmers market managers. This process yielded an estimate of total farmers' market sales in South Carolina of \$7.321 million a difference of 2.9% from our first estimate. We used the vendor survey data to distribute total sales across the farm size and type categories. Among the \$7.321 million total value, sales were concentrated in medium size crop farms (\$3.81 million or 51.6%), small crop farms (\$1.852 million or 25.1%) and medium size livestock farms (\$0.976 million or 13.2%).

Formulation of the Certified South Carolina Grown Campaign Impact on South Carolina Economy through Farmers Markets

According to the survey of farmer market vendors, the Certified South Carolina Grown Campaign was responsible for an 11.1% increase in sales (\$0.739 million) and an 8.9% increase in profitability. First, we constructed our model to account for this increase in profitability (increasing profit share of input-output coefficient by the 8.9% with a concomitant decrease in

the value of all other coefficients). This model was used in our estimate of the economic impact of farmers markets on the South Carolina economy based on the \$7.321 million in direct sales. To evaluate the impact of the program, we removed the increase in profitability due to the program (i.e., the 8.9%) and readjusted all coefficients in our model. We then calculated the economic impact of farmers' market sales without the \$0.765 million due to the program (i.e., \$6.556 million in sales). The difference between the farmers' market sales and profitability with the campaign versus without provided our estimate of the direct and indirect contribution of the campaign to the South Carolina economy as transmitted through farmers' markets.

Formulation of the Certified South Carolina Grown Campaign Impact on South Carolina Economy through Restaurants

Restaurants are another marketing channel through which the campaign encourages consumers to buy South Carolina produced agricultural products. According to the South Carolina Department of Agriculture website, 347 restaurants participate in the campaign.⁴ Survey data discussed in chapter 3 of this report indicated that on average the campaign increased sales by 2.8%. Based on data from County Business Patterns and our IMPLAN model, we calculated that the average value of sales by full-service restaurants was \$909,846 in 2009. Assuming that campaign restaurants are typical, participation in the campaign across all 347 restaurants increased total sales in the entire state industry by \$8.761 million. We also made modification to our SAM coefficients by slightly increasing different sales by farms to restaurants as a result of

⁴ In 2011, 288 restaurants participated in the program; that population formed the basis of our survey. Our impact analysis is based on participating restaurants as of 2011.

the program and slightly decreasing the resulting spending in the wholesale and food manufacturing sectors and increasing profits by 0.95% based on survey results.⁵

Results

Farmers' Markets

The distribution of the total impact of farmers' markets on the South Carolina economy by major industry category is provided in Table 4.1 (p. 92). Gross impacts on industry output totaling \$13.410 million were concentrated in agriculture and resource activities and trade and transportation-based activity. In terms of gross state product, impacts of \$5.047 million were concentrated in agriculture (38.2%), trade and transport activities and financial activities (16.5%) and services, including agricultural services (11.3%). A total impact of \$3.443 million on labor income followed a similar pattern, with 50.8% in agriculture, 8.4% in trade and transportation, and 24.9% in services including agricultural services. In terms of employment, the total impact of 361.4 full-time equivalent (FTE) jobs was also concentrated in agriculture (88.3% of the total job impact) and services (6.3%).

Our estimate of the economic impact of farmers markets without the effect of the Certified South Carolina Grown Campaign translated into \$11.787 million in gross industry output, \$3.098 million in labor income, \$4.528 million in gross state product, and 324.2 full-time equivalent jobs. In comparison to the economic impact of farmers markets with the affects of the program included, the program had a net direct and indirect affect as transmitted through farmers markets of \$1.623 million in gross industry output, \$0.354 million in earned income, \$0.519

⁵ Study survey results indicated an average increase in cost of \$143 due to the campaign for participating restaurants; give an average sales value of over \$900,000, we did not adjust coefficient because of these exceptional small cost increases due to the program. Restaurants also reported a net small increase in the cost of purchase agricultural input (4.7%); we accounted for this increase in adjusting our coefficients in the value of purchases by restaurants from local farmers

million in gross state product, and 37.1 full-time equivalent jobs (Table 4.2, p. 93). These program-based impacts were concentrated in agriculture and in agricultural services.

We also evaluated the impact of the opportunity costs of spending at state farmers markets on other parts of the economy. This evaluation was based on consumer response concerning where they would spend had they not spent at farmers markets in the state. Results from consumer survey indicated that they would have spent 41.4% of their farmers market spending on grocery store food purchases, 18.2% in restaurants, 20.9% in non-food purchases, and 19.6% would have gone to savings. Savings would have no current economic impact and hence no opportunity cost. Grocery store spending was margined into purchases at the farm level, wholesale activity, grocery stores as retail markup, and appropriate transportation sectors such as truck transportation. We then applied regional purchase coefficient to each of these sectors to ascertain spending in South Carolina versus dollars that leaked out of the economy (and which of course has no opportunity cost on the state economy). We also distributed the non-food portion of spending based on spending patterns for a typical household in the \$75,000 through \$100,000 personal income category (eliminating purchases on grocery and restaurants as food items). Once again, we applied appropriate regional purchase coefficients to each of the spending category. The result was an opportunity cost scenario across all sectors of the South Carolina economy totaling \$4.092 million in direct economic impact (with the remaining 44.1% or \$3.229 million in leakage). Results from the opportunity cost scenario impact are provided in Table 4.3 (p. 94). The total impact of the opportunity cost of spending at farmers' markets in South Carolina was \$7.206 million in gross industry output, \$2.433 million in earned income, \$4.030 million in gross state product, and 104.4 full-time equivalent jobs. This spending impact was concentrated in Food Services and Drinking Places, with \$0.642 million in gross state

product impacts, and Retail Stores-Food and Beverage, with \$0.415 million in earned income impacts and medium size crop farms (8.8 full-time equivalent jobs).

We also subtracted the results from the farmers' market impact scenario by the results from the opportunity cost scenario, which provided our estimate of the net impact of farmers' markets on the South Carolina economy. The resulting net impact for farmers' markets in the state are \$7.206 million in gross industry output, \$2.433 million in earned income, \$4.030 million in gross state product, and 104.3 full-time equivalent jobs. As shown in Table 4.4 (p. 95), reduction in economic impacts were concentrated in Food Services and Drinking Places with a net job loss of 16.4 full-time equivalent jobs and a decline of \$1.095 million in gross output and Retail Stores-Food and Beverage with a net job loss of 11.7 full-time equivalent jobs a decline of \$0.629 million in gross state product.

Applying the same net scenario to the Certified South Carolina Grown Campaign economic impacts, we determined that the net impact of the campaign as transmitted through farmers' markets was \$0.751 million in gross industry output, \$0.104 million in earned income, \$0.104 million in gross state product, and 26.4 full-time equivalent jobs.

Restaurants

Gross impacts on industry output totaling \$15.748 million were concentrated in food services and drinking places, wholesale trade, finance and insurance, and rental services (Table 4.5, p. 96). In terms of gross state product, impacts of \$8.595 million were concentrated in food services and drinking places (i.e., the sector containing restaurants) at \$4.583 million, rental activity (\$0.992 million), and professional, scientific, and technical services. A total impact of \$5.346 million on earned income followed a similar pattern, with over half directly in the food services and drink places sector. In terms of employment, the total impact of 190.2 full-time

equivalent (FTE) jobs was also concentrated in the food services and drinking places sector at 133.5 jobs, other retail activity (6.4 jobs), and the six farming sectors (a total of 7.2 jobs).

Because a significant portion of local food purchases by restaurants were at farmers markets (18.1%), we adjusted the restaurant impact to avoid double counting. This adjustment led to an adjusted total restaurant impact of \$12.895 million in total industry output, \$4.377 million in earned income, \$7.038 million in gross state product, and 155.7 full-time equivalent jobs.

Summary and Conclusions

Direct and indirect economic impact of the Certified South Carolina Grown Campaign on the South Carolina economy due to increased sales at farmers markets and restaurants was examined in this study. We developed an IMPLAN-based SAM model of the South Carolina economy that takes into account the opportunity cost of money spent at farmer's markets to estimate the net as opposed to gross impact of the campaign on the state economy. This model was used in our estimate of the economic impact of farmers markets on the South Carolina economy based on the information about direct sales elicited from the surveys of farmer's market vendors and managers. To evaluate the impact of the program, we removed the increase in profitability due to the program and readjusted all coefficients in our model. The difference between the farmers' market sales and profitability with the campaign versus without provided our estimate of the direct and indirect contribution of the campaign to the South Carolina economy as transmitted through farmers' markets. A similar approach was used to estimate the impact of the campaign through restaurants.

The survey of the stratified sample of the farmer's market vendors revealed that the Certified South Carolina Grown campaign was responsible for an 11.1% increase in sales and an

8.9% increase in profitability. We estimated that the campaign had a direct and indirect affect as transmitted through farmers markets of \$1.623 million in gross industry output, \$0.354 million in earned income, \$0.519 million in gross state product, and 37.1 full-time equivalent jobs. These program-based impacts were concentrated in agriculture and in agricultural services. We determined that the net impact of the campaign as transmitted through farmers' markets was \$0.751 million in gross industry output, \$0.104 million in earned income, \$0.104 million in gross state product, and 26.4 full-time equivalent jobs. The survey of the restaurants revealed that the campaign increased sales by 2.8%. We estimated an adjusted total restaurant impact of \$12.895 million in total industry output, \$4.377 million in earned income, \$7.038 million in gross state product, and 155.7 full-time equivalent jobs. Taken together, the gross (as opposed to net) impact of the program as transmitted through farmers' markets and restaurants was \$14.518 million in total industry output, \$4.731 million in earned income, \$7.557 million in gross state product, and 192.9 full-time equivalent jobs. These results indicate that the program has a positive effect on the South Carolina economy, although much less than the over 10,000 jobs (Moore School of Business) and the \$132 to one in state government benefit and cost reported elsewhere (Charleston Regional Business Journal, 2010).

This study focused on the farmers markets and restaurants, which are only two of the marketing avenues through which the program can be transmitted. Other marketing channels include grocery stores, community supported agriculture or CSAs, and roadside vendors. The methodology developed in this study can be applied to the data from additional marketing channels combined with information from consumers regarding the opportunity costs of spending via these marketing channels to provide a more general estimate of the economic impact of the campaign.

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Table 4.1. Economic Impact of South Carolina Farmers' Markets.					
Economic Sector		Total Industry Output (Million \$)	Earned Income (Million \$)	Gross State Product (Million \$)	Full-Time Equivalent Jobs
1	Agricultural Crop, Small Size Farms	2.006	0.407	0.431	213.4
2	Agricultural Crop, Medium Size Farm	3.958	1.091	1.153	72.9
3	Agricultural Crop, Largest Farms	0.238	0.101	0.106	0.9
11	Agricultural Livestock, Small Size Farms	0.596	0.038	0.059	23.9
12	Agricultural Livestock, Medium Size Farm	1.097	0.095	0.147	7.7
13	Agricultural Livestock, Largest Farms	0.142	0.018	0.029	0.2
15	Natural Resources	0.002	0.000	0.001	0.0
16	Wood and Furniture Products	0.019	0.005	0.007	0.1
19	Support Activities for Agriculture and Forestry	0.289	0.249	0.216	7.9
20	Mining	0.005	0.001	0.002	0.0
33	Utilities	0.309	0.059	0.199	0.5
34	Construction	0.042	0.015	0.017	0.4
42	Food and Feed Manufacturing	0.085	0.009	0.012	0.2
75	Textiles and Apparel	0.014	0.003	0.004	0.1
104	Pulp, Paper and Printing Products	0.016	0.003	0.005	0.0
115	Petrochemical Manufacture	0.167	0.016	0.026	0.2
130	Fertilizer Manufacturing	0.051	0.002	0.004	0.0
132	Pharmaceutical and Allied Products	0.004	0.000	0.001	0.0
136	Plastics and Allied Products	0.008	0.001	0.002	0.0
151	Tire and Rubber Manufacture	0.010	0.002	0.004	0.0
305	Other Manufacturing ¹	0.070	0.010	0.018	0.2
319	42 Wholesale Trade	0.457	0.168	0.288	2.3
320	Other Retail trade	0.324	0.166	0.262	5.0
324	Retail Stores-Food and Beverage	0.054	0.027	0.043	0.8
332	Transportation, Warehousing	0.213	0.078	0.103	1.7
341	Information	0.124	0.026	0.060	0.4
354	Finance and Insurance	0.784	0.187	0.393	3.4
360	Rental Activities	1.096	0.060	0.732	4.2
367	Professional, Scientific, Technical Services	0.170	0.088	0.108	1.5
382	Administrative, Waste, Management Services	0.146	0.065	0.084	1.7
391	Educational Services	0.049	0.023	0.025	0.8
394	Social Services	0.194	0.108	0.114	1.8
395	Home Health Care Services	0.014	0.008	0.009	0.2
396	Medical Labs, Ambulatory Care Services	0.036	0.014	0.018	0.3
397	Private Hospitals	0.104	0.044	0.047	0.7
398	Nursing and Residential Care Facilities	0.047	0.025	0.027	0.7
402	Arts, Entertainment and Recreation	0.039	0.015	0.022	0.6
411	Accommodations	0.006	0.002	0.003	0.0
413	Food Services and Drinking Places	0.175	0.059	0.084	2.4
414	Other services	0.103	0.052	0.058	2.3
427	Government and Other	0.145	0.105	0.125	1.7
	Total	13.410	3.443	5.047	361.4
	¹ Sum of results for seven model sectors.				

Table 4.2. Economic Impact of Buy South Carolina Campaign Through South Carolina Farmers' Markets.

Economic Sector		Total Industry Output (Million \$)	Earned Income (Million \$)	Gross State Product (Million \$)	Full-Time Equivalent Jobs
1	Agricultural Crop, Small Size Farms	0.212	0.042	0.044	21.9
2	Agricultural Crop, Medium Size Farm	0.413	0.112	0.119	7.5
3	Agricultural Crop, Largest Farms	0.030	0.010	0.011	0.1
11	Agricultural Livestock, Small Size Farms	0.067	0.004	0.006	2.5
12	Agricultural Livestock, Medium Size Farm	0.119	0.010	0.015	0.8
13	Agricultural Livestock, Largest Farms	0.021	0.002	0.003	0.0
15	Natural Resources	0.000	0.000	0.000	0.0
16	Wood and Furniture Products	0.003	0.000	0.001	0.0
19	Support Activities for Agriculture and Forestry	0.038	0.026	0.022	0.8
20	Mining	0.001	0.000	0.000	0.0
33	Utilities	0.043	0.006	0.020	0.1
34	Construction	0.006	0.001	0.002	0.0
42	Food and Feed Manufacturing	0.013	0.001	0.001	0.0
75	Textiles and Apparel	0.002	0.000	0.000	0.0
104	Pulp, Paper and Printing Products	0.002	0.000	0.000	0.0
115	Petrochemical Manufacture	0.022	0.002	0.003	0.0
130	Fertilizer Manufacturing	0.007	0.000	0.000	0.0
132	Pharmaceutical and Allied Products	0.001	0.000	0.000	0.0
136	Plastics and Allied Products	0.001	0.000	0.000	0.0
151	Tire and Rubber Manufacture	0.001	0.000	0.000	0.0
305	Other Manufacturing ¹	0.010	0.001	0.002	0.0
319	42 Wholesale Trade	0.061	0.017	0.030	0.2
320	Other Retail trade	0.046	0.017	0.027	0.5
324	Retail Stores-Food and Beverage	0.008	0.003	0.004	0.1
332	Transportation, Warehousing	0.030	0.008	0.011	0.2
341	Information	0.018	0.003	0.006	0.0
354	Finance and Insurance	0.112	0.019	0.040	0.4
360	Rental Activities	0.155	0.006	0.075	0.4
367	Professional, Scientific, Technical Services	0.024	0.009	0.011	0.2
382	Administrative, Waste, Management Services	0.021	0.007	0.009	0.2
391	Educational Services	0.007	0.002	0.003	0.1
394	Social Services	0.029	0.011	0.012	0.2
395	Home Health Care Services	0.002	0.001	0.001	0.0
396	Medical Labs, Ambulatory Care Services	0.005	0.001	0.002	0.0
397	Private Hospitals	0.016	0.005	0.005	0.1
398	Nursing and Residential Care Facilities	0.007	0.003	0.003	0.1
402	Arts, Entertainment and Recreation	0.006	0.002	0.002	0.1
411	Accommodations	0.001	0.000	0.000	0.0
413	Food Services and Drinking Places	0.026	0.006	0.009	0.3
414	Other services	0.015	0.005	0.006	0.2
427	Government and Other	0.021	0.011	0.013	0.2
	Total	1.623	0.354	0.519	37.1
	¹ Sum of results for seven model sectors.				

Table 4.3. Economic Impact, Opportunity Cost, South Carolina Farmers' Markets.					
Economic Sector		Total Industry Output (Million \$)	Earned Income (Million \$)	Gross State Product (Million \$)	Full-Time Equivalent Jobs
1	Agricultural Crop, Small Size Farms	0.246	0.050	0.053	26.2
2	Agricultural Crop, Medium Size Farm	0.476	0.131	0.139	8.8
3	Agricultural Crop, Largest Farms	0.037	0.016	0.017	0.1
11	Agricultural Livestock, Small Size Farms	0.121	0.008	0.012	4.9
12	Agricultural Livestock, Medium Size Farm	0.221	0.019	0.030	1.6
13	Agricultural Livestock, Largest Farms	0.030	0.004	0.006	0.0
15	Natural Resources	0.003	0.000	0.001	0.0
16	Wood and Furniture Products	0.014	0.004	0.005	0.1
19	Support Activities for Agriculture and Forestry	0.038	0.033	0.029	1.1
20	Mining	0.001	0.000	0.000	0.0
33	Utilities	0.139	0.027	0.093	0.3
34	Construction	0.023	0.008	0.010	0.2
42	Food and Feed Manufacturing	0.068	0.007	0.010	0.2
75	Textiles and Apparel	0.011	0.002	0.003	0.0
104	Pulp, Paper and Printing Products	0.015	0.003	0.005	0.0
115	Petrochemical Manufacture	0.034	0.003	0.005	0.0
130	Fertilizer Manufacturing	0.006	0.000	0.001	0.0
132	Pharmaceutical and Allied Products	0.005	0.000	0.001	0.0
136	Plastics and Allied Products	0.008	0.001	0.003	0.0
151	Tire and Rubber Manufacture	0.004	0.001	0.001	0.0
305	Other Manufacturing ¹	0.040	0.007	0.012	0.1
319	42 Wholesale Trade	0.457	0.174	0.298	2.3
320	Other Retail trade	0.293	0.157	0.247	4.8
324	Retail Stores-Food and Beverage	0.796	0.415	0.672	12.6
332	Transportation, Warehousing	0.247	0.094	0.125	2.1
341	Information	0.142	0.031	0.072	0.5
354	Finance and Insurance	0.540	0.135	0.283	2.5
360	Rental Activities	0.790	0.046	0.552	3.2
367	Professional, Scientific, Technical Services	0.167	0.091	0.112	1.6
382	Administrative, Waste, Management Services	0.164	0.076	0.099	2.1
391	Educational Services	0.055	0.027	0.029	0.9
394	Social Services	0.211	0.124	0.132	2.1
395	Home Health Care Services	0.021	0.013	0.014	0.4
396	Medical Labs, Ambulatory Care Services	0.052	0.021	0.027	0.4
397	Private Hospitals	0.145	0.065	0.070	1.0
398	Nursing and Residential Care Facilities	0.047	0.026	0.028	0.8
402	Arts, Entertainment and Recreation	0.047	0.019	0.027	0.8
411	Accomodations	0.003	0.001	0.002	0.0
413	Food Services and Drinking Places	1.270	0.451	0.642	18.7
414	Other services	0.118	0.063	0.070	2.8
427	Government and Other	0.100	0.076	0.090	1.2
	Total	7.206	2.433	4.030	104.3
	¹ Sum of results for seven model sectors.				

Table 4.4. Net Economic Impact of South Carolina Farmers' Markets.					
Economic Sector		Total Industry Output (Million \$)	Earned Income (Million \$)	Gross State Product (Million \$)	Full-Time Equivalent Jobs
1	Agricultural Crop, Small Size Farms	1.760	0.357	0.378	187.2
2	Agricultural Crop, Medium Size Farm	3.482	0.960	1.015	64.1
3	Agricultural Crop, Largest Farms	0.201	0.084	0.089	0.8
11	Agricultural Livestock, Small Size Farms	0.475	0.030	0.047	19.0
12	Agricultural Livestock, Medium Size Farm	0.876	0.076	0.118	6.1
13	Agricultural Livestock, Largest Farms	0.112	0.014	0.022	0.2
15	Natural Resources	-0.002	0.000	-0.001	0.0
16	Wood and Furniture Products	0.005	0.001	0.002	0.0
19	Support Activities for Agriculture and Forestry	0.252	0.216	0.187	6.8
20	Mining	0.004	0.000	0.001	0.0
33	Utilities	0.170	0.031	0.106	0.3
34	Construction	0.019	0.006	0.007	0.2
42	Food and Feed Manufacturing	0.017	0.001	0.002	0.0
75	Textiles and Apparel	0.002	0.000	0.001	0.0
104	Pulp, Paper and Printing Products	0.001	0.000	0.000	0.0
115	Petrochemical Manufacture	0.133	0.012	0.020	0.1
130	Fertilizer Manufacturing	0.045	0.002	0.004	0.0
132	Pharmaceutical and Allied Products	0.000	0.000	0.000	0.0
136	Plastics and Allied Products	0.000	0.000	0.000	0.0
151	Tire and Rubber Manufacture	0.006	0.001	0.002	0.0
305	Other Manufacturing ¹	0.030	0.003	0.006	0.1
319	42 Wholesale Trade	0.000	-0.006	-0.010	-0.1
320	Other Retail trade	0.030	0.009	0.014	0.3
324	Retail Stores-Food and Beverage	-0.742	-0.388	-0.629	-11.8
332	Transportation, Warehousing	-0.034	-0.016	-0.022	-0.4
341	Information	-0.017	-0.005	-0.012	-0.1
354	Finance and Insurance	0.244	0.052	0.110	1.0
360	Rental Activities	0.306	0.015	0.180	1.0
367	Professional, Scientific, Technical Services	0.002	-0.003	-0.003	0.0
382	Administrative, Waste, Management Services	-0.018	-0.012	-0.015	-0.3
391	Educational Services	-0.006	-0.004	-0.005	-0.1
394	Social Services	-0.018	-0.016	-0.018	-0.3
395	Home Health Care Services	-0.008	-0.005	-0.006	-0.1
396	Medical Labs, Ambulatory Care Services	-0.015	-0.007	-0.009	-0.1
397	Private Hospitals	-0.041	-0.021	-0.022	-0.3
398	Nursing and Residential Care Facilities	0.000	-0.001	-0.001	0.0
402	Arts, Entertainment and Recreation	-0.007	-0.004	-0.005	-0.2
411	Accommodations	0.003	0.001	0.001	0.0
413	Food Services and Drinking Places	-1.095	-0.392	-0.558	-16.2
414	Other services	-0.015	-0.011	-0.012	-0.5
427	Government and Other	0.045	0.029	0.035	0.5
	Total	6.204	1.010	1.017	257.1
	¹ Sum of results for seven model sectors.				

Table 4.5. Economic Impact of Buy South Carolina Campaign Through Restaurants.

Economic Sector		Total Industry Output (Million \$)	Earned Income (Million \$)	Gross State Product (Million \$)	Full-Time Equivalent Jobs
1	Agricultural Crop, Small Size Farms	0.043	0.009	0.009	4.6
2	Agricultural Crop, Medium Size Farm	0.069	0.019	0.020	1.3
3	Agricultural Crop, Largest Farms	0.020	0.009	0.009	0.1
11	Agricultural Livestock, Small Size Farms	0.025	0.002	0.003	1.0
12	Agricultural Livestock, Medium Size Farm	0.032	0.003	0.004	0.2
13	Agricultural Livestock, Largest Farms	0.019	0.003	0.004	0.0
15	Natural Resources	0.017	0.002	0.007	0.1
16	Wood and Furniture Products	0.032	0.008	0.012	0.2
19	Support Activities for Agriculture and Forestry	0.008	0.007	0.006	0.2
20	Mining	0.002	0.000	0.001	0.0
33	Utilities	0.259	0.051	0.174	0.5
34	Construction	0.046	0.016	0.019	0.4
42	Food and Feed Manufacturing	0.243	0.026	0.035	0.6
75	Textiles and Apparel	0.015	0.003	0.004	0.1
104	Pulp, Paper and Printing Products	0.050	0.008	0.015	0.1
115	Petrochemical Manufacture	0.030	0.003	0.005	0.0
130	Fertilizer Manufacturing	0.001	0.000	0.000	0.0
132	Pharmaceutical and Allied Products	0.006	0.001	0.001	0.0
136	Plastics and Allied Products	0.021	0.003	0.007	0.0
151	Tire and Rubber Manufacture	0.004	0.001	0.002	0.0
305	Other Manufacturing ¹	0.084	0.017	0.028	0.3
319	42 Wholesale Trade	0.411	0.157	0.268	2.1
320	Other Retail trade	0.394	0.211	0.333	6.4
324	Retail Stores-Food and Beverage	0.082	0.043	0.070	1.3
332	Transportation, Warehousing	0.189	0.072	0.095	1.6
341	Information	0.294	0.064	0.151	1.0
354	Finance and Insurance	0.833	0.209	0.437	3.8
360	Rental Activities	1.420	0.082	0.992	5.8
367	Professional, Scientific, Technical Services	0.400	0.217	0.267	3.7
382	Administrative, Waste, Management Services	0.433	0.201	0.262	5.4
391	Educational Services	0.055	0.027	0.029	0.9
394	Social Services	0.295	0.173	0.184	2.9
395	Home Health Care Services	0.021	0.013	0.014	0.4
396	Medical Labs, Ambulatory Care Services	0.056	0.023	0.029	0.4
397	Private Hospitals	0.163	0.073	0.078	1.2
398	Nursing and Residential Care Facilities	0.072	0.040	0.043	1.2
402	Arts, Entertainment and Recreation	0.085	0.035	0.050	1.5
411	Accomodations	0.008	0.002	0.004	0.1
413	Food Services and Drinking Places	9.073	3.221	4.583	133.5
414	Other services	0.174	0.093	0.103	4.1
427	Government and Other	0.262	0.198	0.236	3.2
	Total	15.748	5.346	8.595	190.2
	¹ Sum of results for seven model sectors.				

Appendix 4.1. Construction of SAM Model

A properly delineated SAM is crucial to our analysis. One important change to the original IMPLAN SAM concerns payments to labor (employee compensation in IMPLAN) and payments to owner-operators (proprietors' income in IMPLAN, which is a mixture of returns to capital and labor). In terms of consumption and aggregate non-market income flows, the original IMPLAN SAM reports household interactions with the rest of the economy by dividing households into nine income groups (ranging from under \$10,000 to over \$150,000). However, for employee compensation and proprietors' income, payments to each household type are placed in a common income pool (i.e., payments to labor and returns to proprietors at the industry level form a single row, or the matrix C is reduced to a one dimensional matrix multiplied by an identity matrix for conformability). Total payments are then allocated to the nine income households based on fixed income shares. Any change in earnings by a particular industry is treated as a regional average income change across the nine groups. But the distribution of earnings between income levels can vary widely among different regional industries; thus model estimates of impacts on income distribution may be biased (Alward 1996).

We tackled this problem by constructing an income distribution matrix linking payments to labor by industries to households by their personal income class (i.e., our C matrix). Generating the income distribution matrix was a daunting task because personal income is comprised of both money and nonmoney income (Olson 2007). Based on national data provided in Olson, money income only constitutes 75 percent of personal income (or personal income is 35 percent larger than money income). Estimates of money income by class can be obtained—at least at the state level—by income class for workers in a variety of industries. A more difficult task is to construct a reasonably accurate way of distributing nonmoney income to households by income class on the income-earning (as opposed to consumption) side.

As discussed in the text, we used the Integrated Public Use Microdata Series (PUMS) dataset (Alexander and Sobek 2005) to estimate the relationship between industry and household by money income class for South Carolina. The PUMS dataset is based on American Community Survey, meaning we relied on 2009 data.

We then estimated the relationship between money household income and the various forms of nonmoney, personal income by money household income group. That is, how much nonmoney income does a typical household in a given money income class receive from a specific source, such as food stamps? A possible limitation of such an approach is that the estimates of these relationships are generally based on national data. This requires the assumption that within an income class, behavior at the state level is the same as found nationally. While we believe that this is a reasonable assumption, it is also eased to a certain extent by the use of a regional control total in several different ways. First, data sources such as the Regional Economic Information System provided by the Bureau of Economic Analysis, U.S. Department of Commerce (2009) usually provide regional control totals indicating the total level of nonmoney payments. Further, based on annual censuses and other data sources, IMPLAN provides an estimate of personal income by income class (Olson 2007). These estimates are used to drive household spending in the model. Hence, our procedure of building up from the PUMS data yields estimates that must ultimately be reconciled with these other data sources.

Personal income excluded from money income is generally “payments” made to or on behalf of individuals but do not go to the individual as immediate money income. For example, employer payments to government employee retirement plans and to private health and pension plans form nonlabor income as part of personal income. These payments are not included in money income. Transfer payments are an important part of personal income and money income. However, the value of in-kind transfer payments are included in personal income but excluded

from money income (e.g., Medicaid and Medicare are payments to medical service providers on behalf of individuals). These payments are treated as income in personal income but are not money income. Food stamps are another form of in-kind payments to individuals. Various types of imputed income (the valuation of a “free” service or capital consumption) are also included in personal income but not money income (U.S. Dept. of Commerce, BEA 2009).

Money income also includes some income that is excluded from personal income. This includes income sources that are personal contributions for social insurance, various forms of retirement income from government worker retirement plans and private pensions and annuities, and certain interpersonal income transfers (U.S. Dept. of Commerce, BEA 2009). Of these exclusions, the contribution to social insurance is the most important. We adjusted money income levels based on income class and the rules for social security contribution income limits for 2009 (U.S. Social Security Administration 2011). We also limited our PUMS data analysis households with earned income, thus reducing the import of retirement money payments.

Other labor income forms one part of the nonmoney personal income flow to households from industries primarily in the form of employee insurance and retirement benefit payments. Also accounted for were appropriate payments to retirement accounts, accumulation of interest income in accounts, a valuation of owner-occupied housing, and the value of food stamps and Medicaid payments.

The adjustment values were used to scale the individual estimates from the PUMS data. By working on the individual observation level, households could move between income classes in going from money to personal income. For example, households in the higher end of the \$35,000 to \$50,000 money income class would move into the \$50,000-\$75,000 personal income class. Households in the lower end of the \$35,000 to \$50,000 income class would not shift to a higher personal income class.

Summary, Conclusions and Implications

The rise in consumer interest in local foods has been accompanied by increased participation of state departments of agriculture in promoting these products. While numerous promotion campaigns have been supported by various states, efforts evaluating their effectiveness have been limited and the results variable. Furthermore, campaign effectiveness has been typically measured ex-post, long after campaign investment decisions have been made. Many of these investment decisions could have been more efficient if the information about the potential impact of the campaign and its components was taken into account. The issue of efficient fund allocation becomes particularly important in the environment of decreasing state and federal funding. In this environment it becomes increasingly important to have a framework that will allow to measure and discern the overall impact of a campaign and its various components on the local economy and various economic agents. The goal of this project was to provide such a framework.

We started by developing a framework for assessing the overall potential economic impact of a regional promotion campaign on producer surplus that can be used at the initial stages of the campaign. The proposed approach was based on the combination of contingent valuation methods with a partial displacement equilibrium model. Contingent valuation methods were used to measure changes in consumer willingness to pay for locally grown products at the initial stages of campaign implementation when sales data necessary to directly measure the shift in demand are not yet available. This measure of advertising impact was then used in a partial displacement equilibrium model to estimate the change in producer surplus due to the campaign. The main benefit of the proposed approach is the ability to provide an impact assessment at the initial stages of campaign development. Our findings have already been published in the *Journal*

of Agricultural and Resource Economics and our models have been shared with other colleagues around the country that are charged with conducting similar analyses in their States (e.g., Hu, Onozaka, and Thilmany, 2011; Collart, Palma, and Carpio, 2011).

Another limitation of previous studies evaluating the effectiveness and impact of regional agricultural campaigns is their exclusive focus on the benefits received by farmers. Other potential campaign beneficiaries such as consumers, local restaurants and farmers markets have been largely ignored in the previous literature. In the case of consumers this issue is very important since regional agricultural promotion campaigns are mainly funded using state tax revenues. Hence, the objective of the second part of this project was to analyze the impact of government sponsored advertising on consumer welfare. Our theoretical analysis indicates that the overall welfare (i.e., economic) impact of government sponsored advertising on consumers and the society depends upon the characterization of advertising as informative or complementary. If government sponsored advertising is purely informative, it results in a simple welfare transfer mechanism from consumers to producers without additional net benefits to society. However, if the promotion campaign is complementary in nature, it can increase consumer and total social welfare. We developed an empirical approach for establishing whether advertising is informative or complementary using contingent valuation procedures. The proposed framework was applied to the estimation of the consumer welfare impact of the South Carolina locally grown campaign using alternative campaign financing vehicles (a new tax versus the reallocation of current taxes). Our findings suggest that the South Carolina campaign is complementary in nature and increases consumer welfare by \$68 million per year. In combination with the increase in producer welfare that was estimated to be \$22 million per year in the first part of this study, we estimated the total impact of the campaign at about \$88 million

per year. We also found that the campaign is more likely to be supported if the funding came from existing rather than new taxes. This second part of the study allows for a more comprehensive analysis of the campaign impact while retaining the ability to provide impact analysis at the initial stages of campaign development. These findings can be used by the South Carolina Department of Agriculture to demonstrate the effectiveness and the return on investment for the campaign to the local legislators as they are trying to secure additional funding and support. The framework is general enough to be used for evaluation of various types of government sponsored advertising campaigns.

The next issue that was tackled in this study was the relative value of various campaign components. The components of the South Carolina Locally grown campaign include the design and distribution of labels and signage for “Certified South Carolina Grown” products; the advertisement of South Carolina food products on television, radio, magazines, newspapers and billboards; and the “Fresh on the Menu” component focusing on advertising at local restaurants. Most of the campaign expenditures (>70%) are devoted to multimedia advertising. Is this the most efficient allocation of funding? Based on stated-preference choice experiments we developed a framework for the evaluation of the economic value of separate campaign components and applied it to a generally overlooked segment of local restaurants. We found that the participating restaurants would be willing to pay on average \$125.22, \$195.23, and \$212.53 per year for having Labeling, Multimedia Advertising, and "Fresh on the Menu" components, respectively. We also found that restaurants would prefer to participate in the *Certified SC Grown* campaign by donating annually rather than paying a membership fee. These results suggest that participating restaurants would be willing to donate on average of \$532.98 annually to support a campaign that includes all these components (consistent with the current design of

the campaign). The framework and survey instruments developed in this study can be applied to a broader sample of population in order to draw more general conclusions. This framework provides a tool for selecting the best and most efficient methods of promotion and marketing agricultural products for existing and new locally grown promotion campaigns.

Finally, we took a more general look at the campaign and its direct and indirect contribution to the state economy. We developed and IMPLAN-based SAM model of the South Carolina economy to estimate the economic impact of the campaign due to perceived changes in sales and profitability and applied it to the generally overlooked segments of farmers markets and restaurants. The data for perceived changes in sales and profitability was generated from surveys of farmers markets and restaurants. We also asked consumers about where they would spend if they had not spent at farmers markets to take into account the opportunity costs and estimate the net as opposed to gross impact of the campaign on the state economy. We estimated that the gross impact of the program as transmitted through farmers' markets and restaurants was \$14.518 million in total industry output, \$4.731 million in earned income, \$7.557 million in gross state product, and 192.9 full-time equivalent jobs. This methodology can be applied to the data from additional marketing channels combined with information from consumers regarding the opportunity costs of spending via these marketing channels to provide a more general estimate of the economic impact of the campaign.

Overall, as the result of this project, we estimated that the South Carolina locally grown campaign yielded a \$22 million per year increase in producer welfare, \$68 million per year increase in consumer welfare, along with \$14.518 million in total industry output, \$4.731 million in earned income, \$7.557 million in gross state product, and 192.9 full-time equivalent jobs due to its impact on farmer's markets and restaurants. To the best of our knowledge, this is the most

comprehensive study of a locally grown program that has been conducted to date. The tools and methods developed in this study are readily available for continued evaluation of this and other government sponsored promotion campaigns. We believe that the taxpayers will be the ultimate beneficiaries of this research as more informed and efficient government sponsored promotion campaign investments are made.

References

Hu, W. Y. Onozaka, and D. Thilmany. "What Are the Economic Welfare Effects of Local Food Marketing? Exploring Impacts with the Case of Colorado Apples." *Selected Paper presented at the Agricultural & Applied Economics Association's 2011 AAEA & NAREA Joint Annual Meeting, Pittsburgh, Pennsylvania, July 24-26, 2011.*

Collart, A.J., M.A. Palma, and C.E. Carpio. "Promoting a local brand: Assessing the Economic Benefits of the Texas Superstar® and Earth-Kind® Promotion on Place (POP) Program." *Selected Paper presented at the Southern Agricultural Economics Association Annual Meeting, Corpus Christi, Texas, February 5-8, 2011*

APPENDIX A

SURVEY RESULTS

CONSUMER TELEPHONE SURVEY

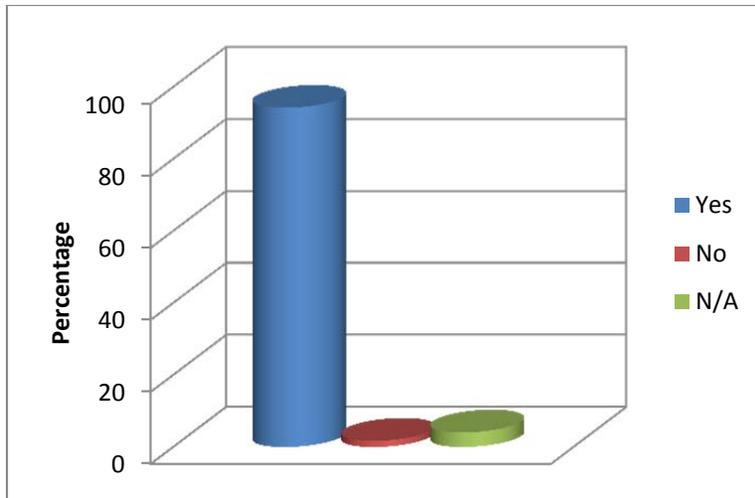
RESULTS

1. Phone extension (by observation only)

Answer	Response	%
864	86	50
803	49	28
843	37	22
TOTAL	172	100

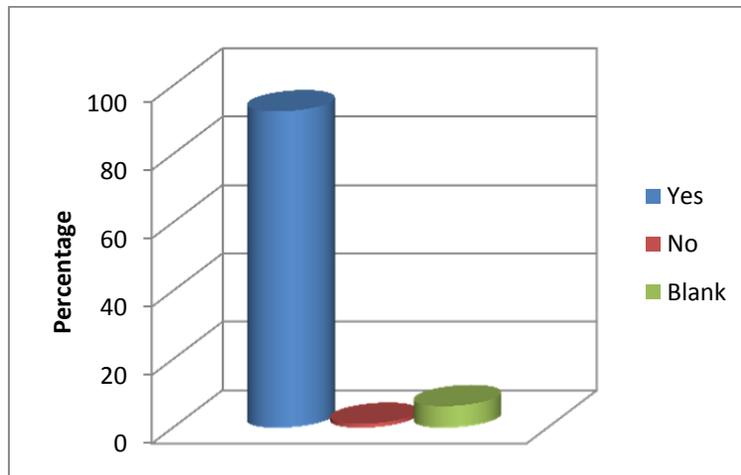
2. Do I have your permission to continue with the survey today?

Answer	Response	%
Yes	163	94
No	3	2
N/A	7	4
TOTAL	173	100



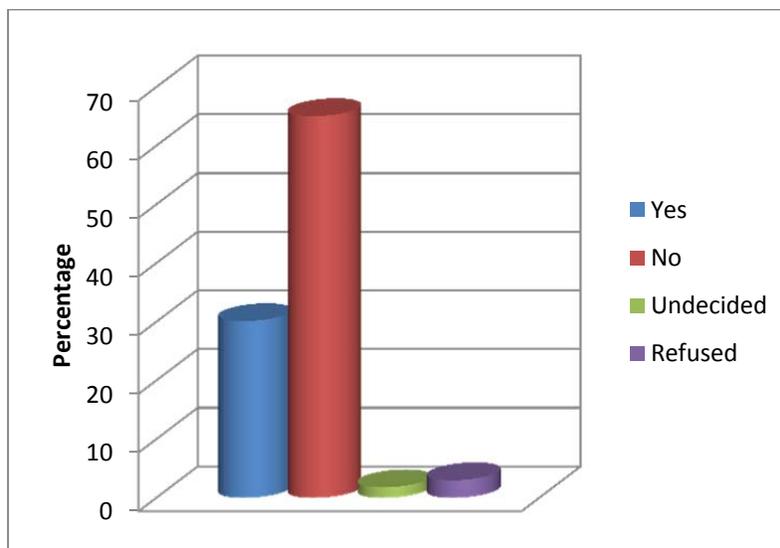
3. For the purposes of this study, are you over the age of 18?

Answer	Response	%
Yes	161	93
No	2	1
Blank	11	6
TOTAL	174	100



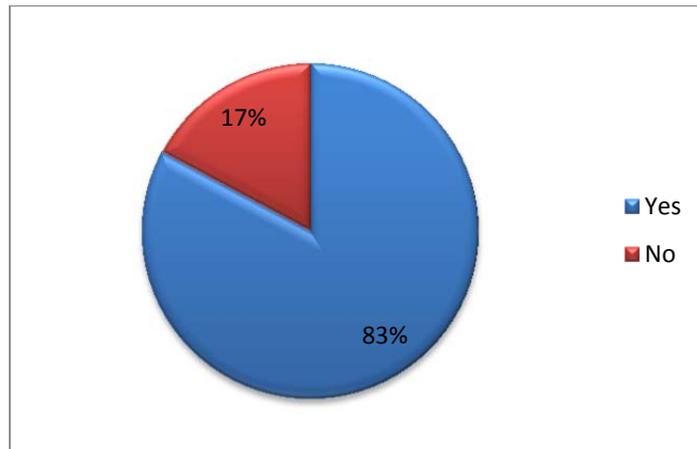
4. A few years ago the South Carolina Department of Agriculture launched an advertising campaign called “Nothing’s Fresher, Nothing’s Finer” to promote the quality of fruits, meats and vegetables produced in South Carolina. Are you aware of this promotion campaign?

Answer	Response	%
Yes	50	30
No	108	65
Undecided	3	2
Refused	5	3
TOTAL	166	100



5. The goal of the South Carolina “Nothing’s Fresher, Nothing’s Finer” campaign is to increase consumer demand for the state grown agricultural products. Campaign activities include the design and distribution of labels and signage for “Certified South Carolina Grown” products; the advertisement of South Carolina grown products on Television, Radio, Magazines, Newspapers and Billboards; and the “Fresh on the Menu” program displays at local restaurants. Similar campaigns are run by most other states in the country. Do you support this campaign?

Answer	Response	%
Yes	135	83
No	28	17
TOTAL	163	100



6. If the Nothing's Fresher, Nothing's Finer program were placed on the next ballot, would you vote for the program if the special tax needed to fund the program cost your household [ROTATE OPTIONS BUT GIVE RESPONDENTS ONLY ONE OPTION. RECORD OPTION GIVEN] per year? (knowing also that due to the increased consumer demand as a result of the campaign, South Carolina grown product prices would increase by about [ROTATE OPTIONS BUT GIVE RESPONDENTS ONLY ONE OPTION. RECORD OPTION GIVEN])

FIRST GROUP SURVEYED

\$1			\$5			\$10			\$25			\$50		
Answer	Resp.	%	Answer	Resp.	%	Answer	Resp.	%	Answer	Resp.	%	Answer	Resp.	%
Yes	1	20	Yes	5	42	Yes	4	80	Yes	2	40	Yes	0	0
No	4	80	No	7	58	No	1	20	No	3	60	No	1	100
TOTAL	5	100	TOTAL	12	100	TOTAL	5	100	TOTAL	5	100	TOTAL	1	100

SECOND GROUP SURVEYED

\$1, 3%			\$5, 3%			\$10, 3%			\$25, 3%			\$50, 3%		
Answer	Resp.	%	Answer	Resp.	%	Answer	Resp.	%	Answer	Resp.	%	Answer	Resp.	%
Yes	1	100	Yes	5	45	Yes	5	83	Yes	3	50	Yes	3	100
No	0	0	No	6	55	No	1	17	No	3	50	No	0	0
TOTAL	1	100	TOTAL	11	100	TOTAL	6	100	TOTAL	6	100	TOTAL	3	100

\$1, 6%			\$5, 6%			\$10, 6%			\$25, 6%			\$50, 6%		
Answer	Resp.	%												
Yes	0	0	Yes	1	33	Yes	4	100	Yes	3	100	Yes	4	67
No	1	100	No	2	67	No	0	0	No	0	0	No	2	33
TOTAL	1	100	TOTAL	3	100	TOTAL	4	100	TOTAL	3	100	TOTAL	6	100

THIRD GROUP SURVEYED

\$1			\$5			\$10			\$25			\$50		
Answer	Resp.	%	Answer	Resp.	%	Answer	Resp.	%	Answer	Resp.	%	Answer	Resp.	%
Yes	2	29	Yes	9	64	Yes	4	80	Yes	3	50	Yes	0	0
No	5	71	No	5	36	No	1	20	No	3	50	No	1	100
N/A	0	0	N/A	0	0	N/A	0	0	N/A	0	0	N/A	0	0
TOTAL	7	100	TOTAL	14	100	TOTAL	5	100	TOTAL	6	100	TOTAL	1	100

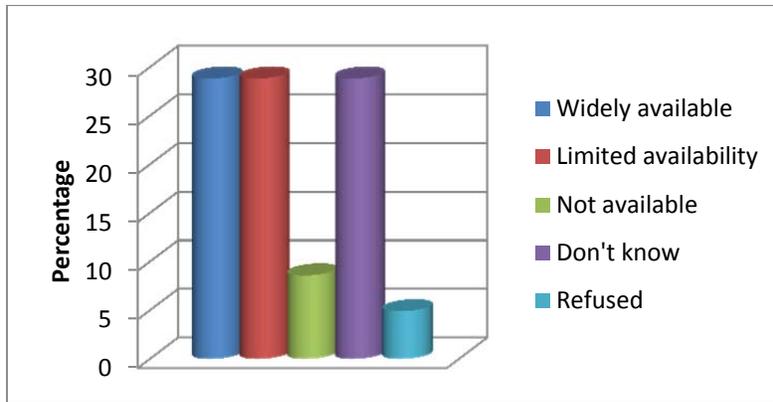
FOURTH GROUP SURVEYED

\$1, 3%			\$5, 3%			\$10, 3%			\$25, 3%			\$50, 3%		
Answer	Resp.	%	Answer	Resp.	%	Answer	Resp.	%	Answer	Resp.	%	Answer	Resp.	%
Yes	4	80	Yes	3	50	Yes	3	43	Yes	5	63	Yes	1	13
No	1	20	No	3	50	No	4	57	No	3	38	No	7	88
TOTAL	5	100	TOTAL	6	100	TOTAL	7	100	TOTAL	8	100	TOTAL	8	100

\$1, 6%			\$5, 6%			\$10, 6%			\$25, 6%			\$50, 6%		
Answer	Resp.	%	Answer	Resp.	%	Answer	Resp.	%	Answer	Resp.	%	Answer	Resp.	%
Yes	2	100	Yes	2	67	Yes	1	13	Yes	5	56	Yes	1	33
No	0	0	No	1	33	No	7	88	No	4	44	No	2	67
TOTAL	2	100	TOTAL	3	100	TOTAL	8	100	TOTAL	9	100	TOTAL	3	100

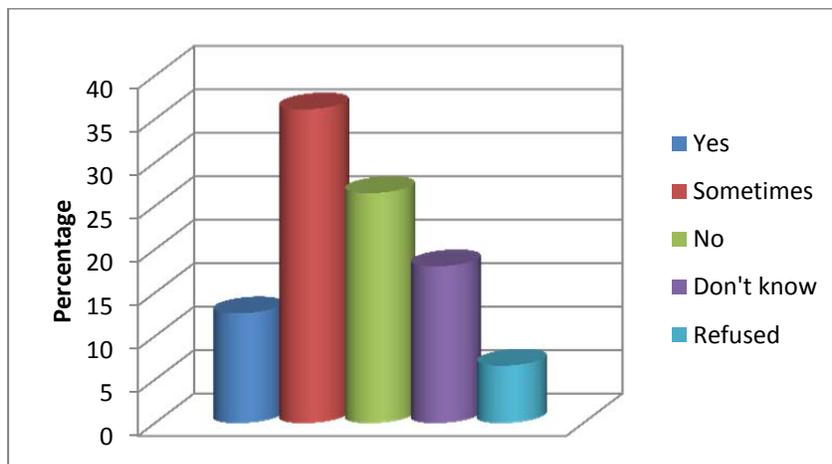
7. In your opinion, are South Carolina grown fruits, vegetables and other products widely available at your regular grocery stores?

Answer	Response	%
Widely available	47	29
Limited availability	47	29
Not available	14	9
Don't know	47	29
Refused	8	5
TOTAL	163	100



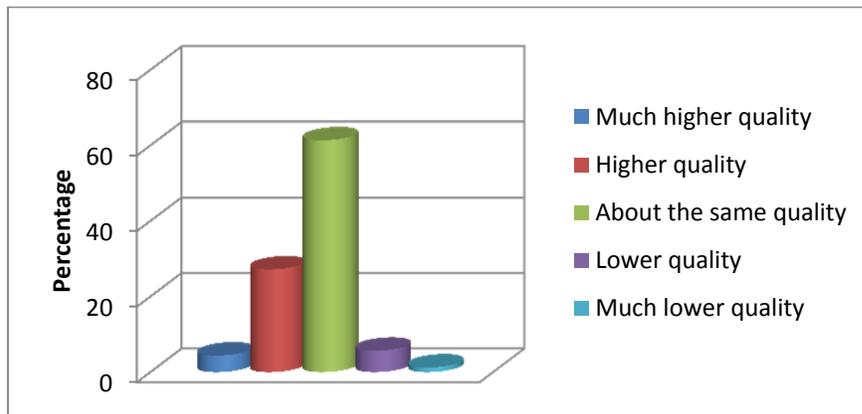
8. When shopping at your local grocery store or market, can you tell which products are from South Carolina?

Answer	Response	%
Yes	21	13
Sometimes	60	36
No	44	27
Don't know	30	18
Refused	11	7
TOTAL	166	100



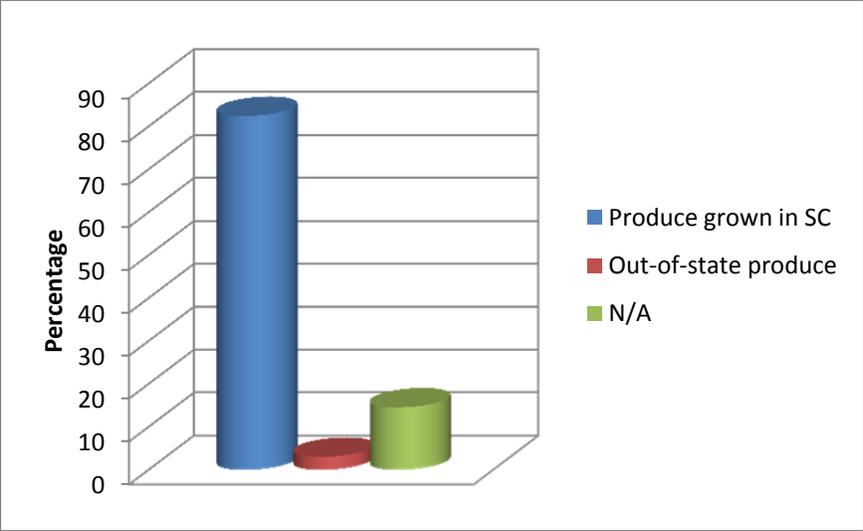
9. Overall, how does South Carolina compare to other states in terms of quality of produce? Would you say South Carolina's produce is much higher quality, higher quality, about the same quality, lower quality or much lower quality?

Answer	Response	%
Much higher quality	7	4
Higher quality	43	27
About the same quality	97	61
Lower quality	9	6
Much lower quality	2	1
TOTAL	158	100



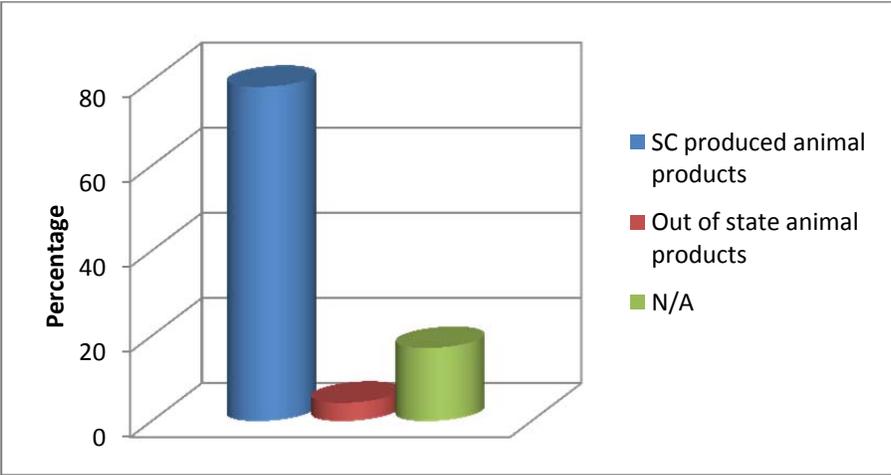
10. If you were buying vegetables or fruit from the market, and you could choose *at equal prices* between produce grown in South Carolina and out-of-state produce, which one would you choose?

Answer	Response	%
Produce grown in SC	136	82
Out-of-state produce	5	3
N/A	24	15
TOTAL	165	100



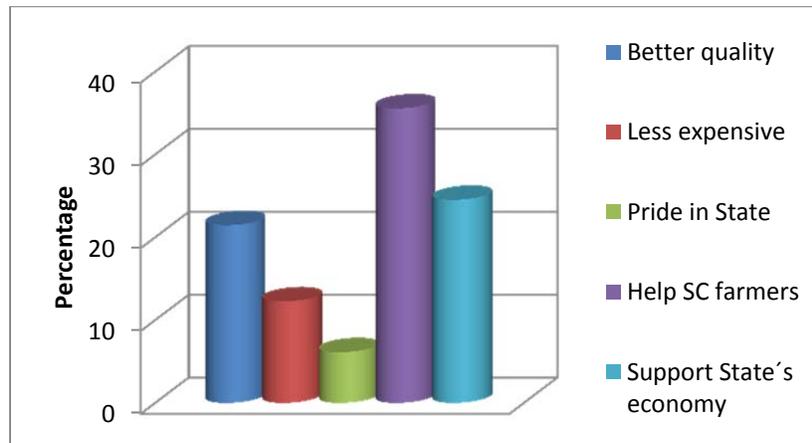
11. How about meat, fish, poultry and dairy products? If you were buying animal products, and you could choose *at equal prices* between products produced in South Carolina and out-of-state animal products, which one would you choose?

Answer	Response	%
SC produced animal products	128	79
Out of state animal products	7	4
N/A	28	17
TOTAL	163	100



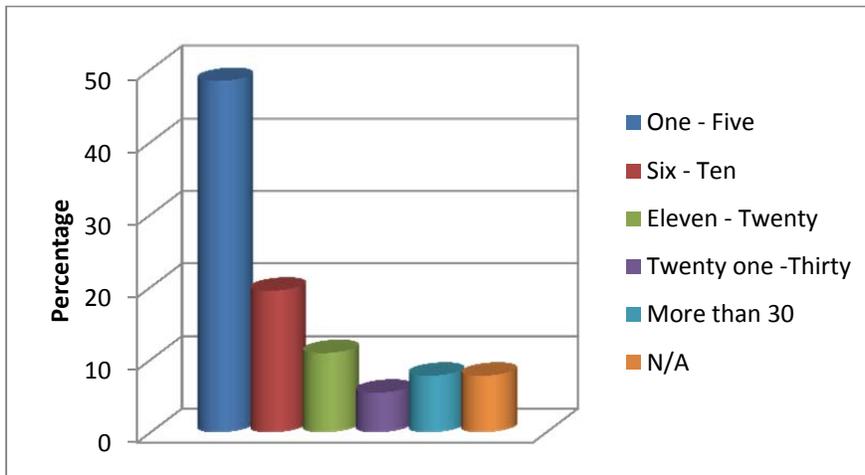
12. Which of the following is the most important motivation to buy South Carolina's agricultural products? [ROTATE]

Answer	Response	%
Better quality	35	21
Less expensive	20	12
Pride in State	10	6
Help SC farmers	58	36
Support State's economy	40	25
TOTAL	163	100



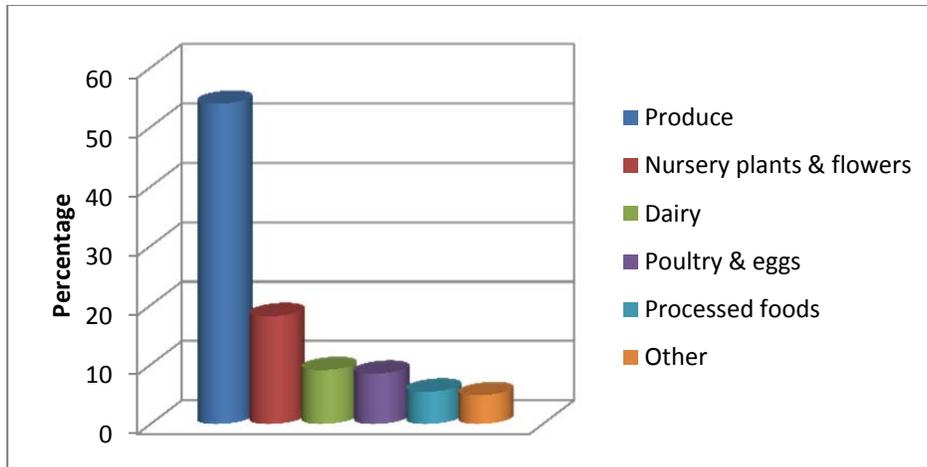
13. During the last 12 months, how many times have you visited Farmers' Markets?

Answer	Response	%
One - Five	62	48
Six - Ten	25	20
Eleven - Twenty	14	11
Twenty one -Thirty	7	5
More than 30	10	8
N/A	10	8
TOTAL	128	100



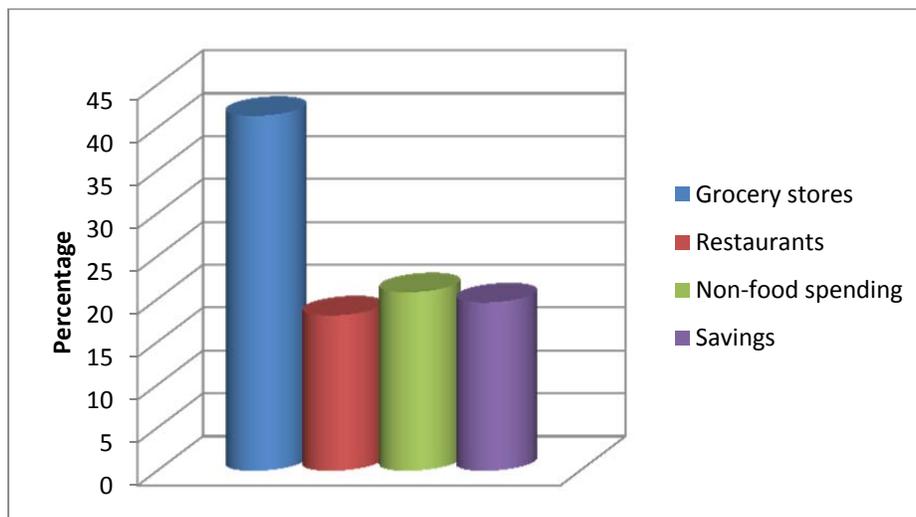
14. In a typical visit to the farmers market which of the following products do you purchase? (If yes, ask respondent how much they spend on the item.)

Answer	Response	%	Average Amount spent (\$)
Produce	89	54	21.24
Nursery plants & flowers	30	18	40.36
Dairy	15	9	17.30
Poultry & eggs	14	8	4.75
Processed foods	9	5	15.58
Other	8	5	59.13
TOTAL	165	100	



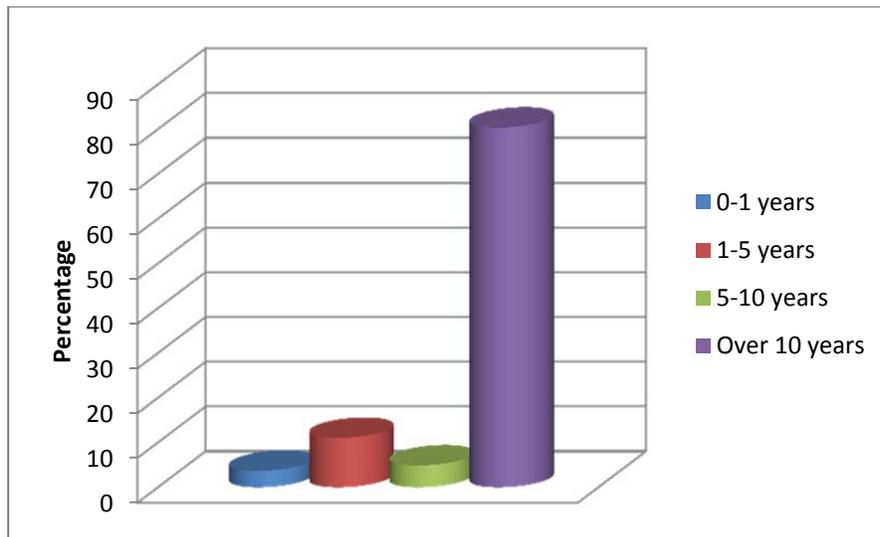
15. If you had *not* spent the above money at the farmers markets, in percentage terms, how would the money have been allocated among the following four categories: grocery stores, restaurants, non-food spending and savings?

Answer	\$ average	%
Grocery stores	323	41
Restaurants	142	18
Non-food spending	163	21
Savings	153	20
TOTAL	781	100



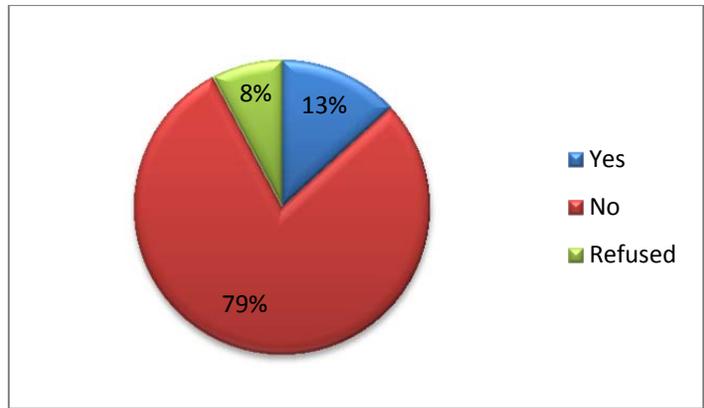
16. First, I'd like to ask you how long you have lived in South Carolina.

Answer	Response	%
0-1 years	6	4
1-5 years	18	11
5-10 years	8	5
Over 10 years	131	80
TOTAL	163	100



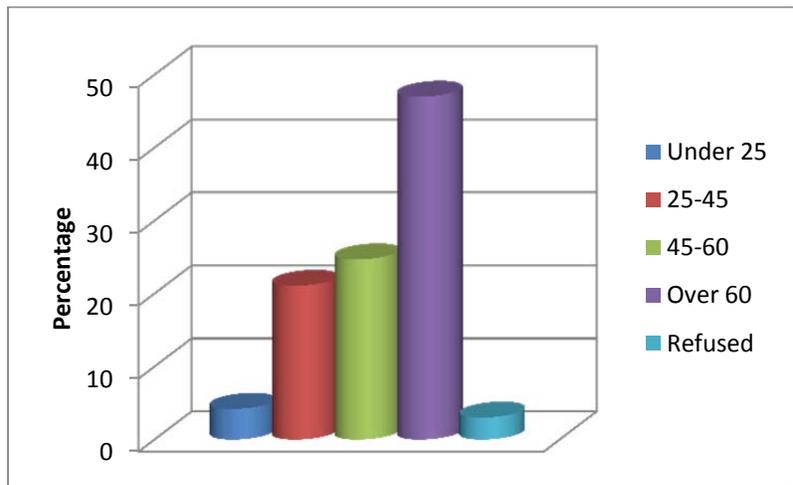
17. Do you work in the agricultural industry?

Answer	Response	%
Yes	22	13
No	132	79
Refused	13	8
TOTAL	167	100



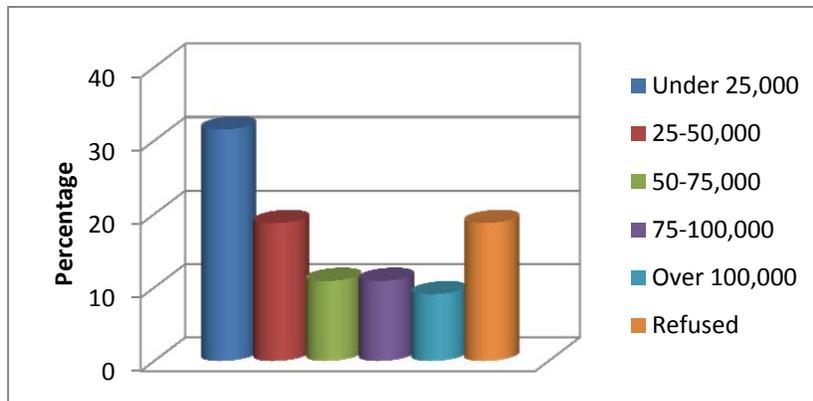
18. Please tell me your age.

Answer	Response	%
Under 25	7	4
25-45	35	21
45-60	41	25
Over 60	78	47
Refused	5	3
TOTAL	166	100



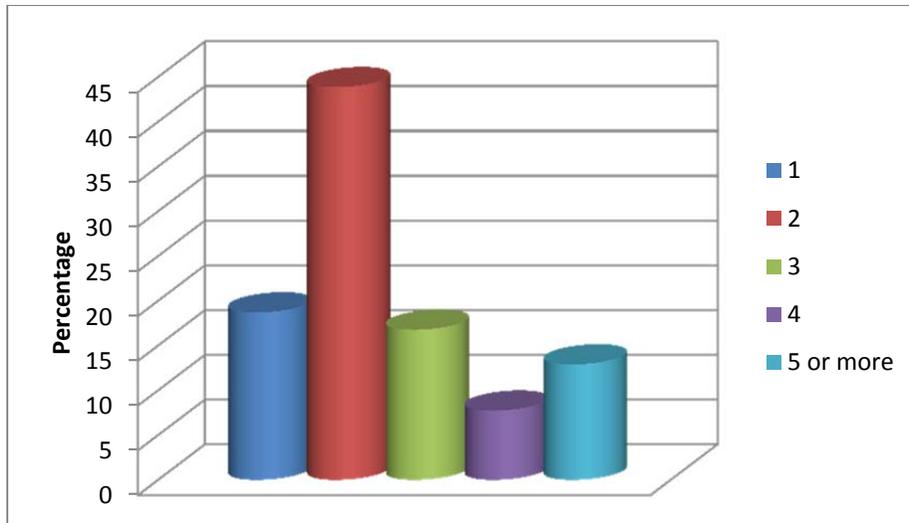
19. Please tell me which of the following categories your annual household income falls into.

Answer	Response	%
Under \$25,000	52	32
\$25-\$50,000	31	19
\$50-\$75,000	18	11
\$75-\$100,000	18	11
Over \$100,000	15	9
Refused	31	19
TOTAL	165	100



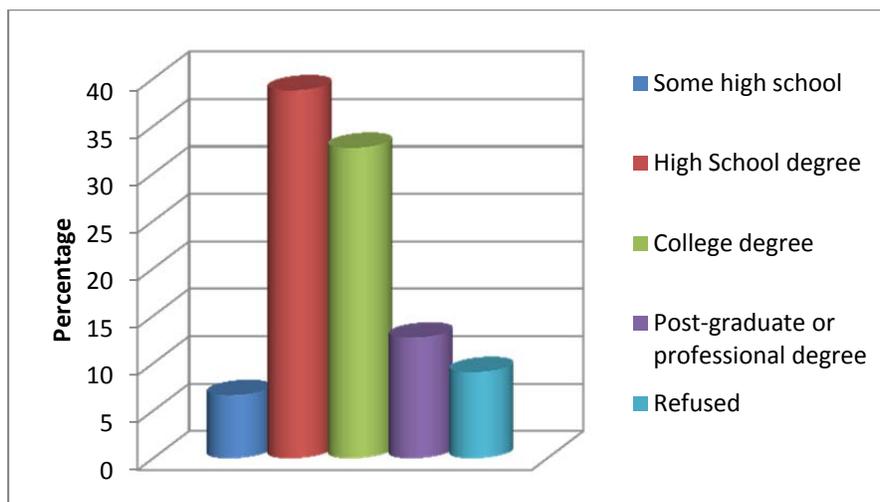
20. How many people live in your household?

Answer	Response	%
1	29	19
2	68	44
3	26	17
4	12	8
5 or more	20	13
TOTAL	155	100



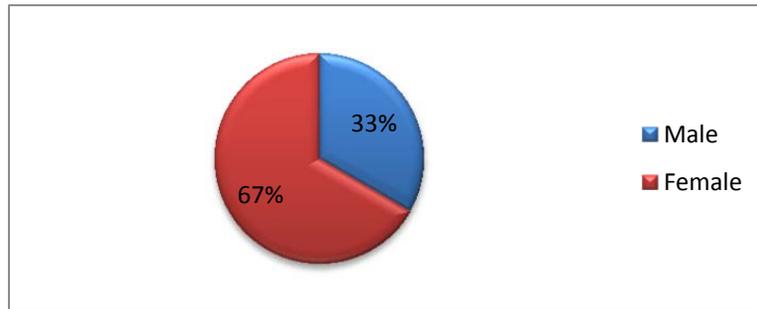
21. Please tell me which of the following describes your level of education.

Answer	Response	%
Some high school	11	7
High School degree	64	39
College degree	54	33
Post-graduate or professional degree	21	13
Refused	15	9
TOTAL	165	100



22. Gender (by observation only)

Answer	Response	%
Male	55	33
Female	110	67
TOTAL	165	100



RESULTS OF THE SURVEY

This survey was conducted by telephone to people who lives in South Carolina. 94% agreed to answer the survey. Most of the people (80%) have lived in SC for more than 10 years. Thirteen percent of respondents work in the agricultural industry. Ages vary from under 25 up over 60 years. Thirty-two percent of people's annual household income falls under \$25,000 and 44% of respondents indicated that two people lived from their annual household income. The level of education varies but the majority (39%) concentrates in High School degree. Thirty-three percent of respondents are male and 67% are female. The results are as follows:

- Thirty percent of the people are aware of the campaign "Nothing's Fresher, Nothing's Finer" and a 65% are not aware of it. After explaining to people what the campaign is about and its goal, 83% of them agreed to support the campaign.
- When people were asked about it they would vote for the program, knowing that the special tax needed to fund the campaign would cost a certain amount of their household per year, 80% of the first group surveyed accepted a cost of \$10. The second group (83%) seemed to be more willing to accept a cost of \$10 dollars if the SC grown products prices would increase about a 3%. Eighty percent of the third group agreed to accept a cost \$10 and 64% were willing to accept a cost of \$5. In the case of the fourth group, 63% of the respondents accepted a cost of \$25 if the SC grown products prices would increase a 6%.
- Regarding the availability of SC grown products, 29% indicated that were widely available at regular grocery stores and another 29% indicated that the products were

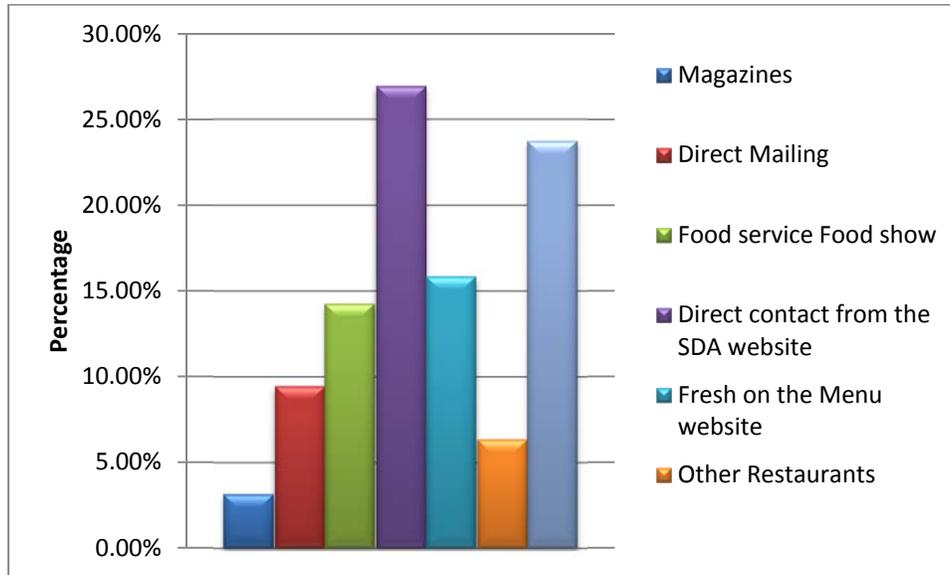
limited available in a regular grocery store. Of all, only 13% are able to tell which products are from South Carolina.

- When people were told to compare the quality of produce from South Carolina with other states, 61% said that was about the same quality and only 27% said that the quality of SC was higher. This would be a good opportunity to increase the competitiveness of production in South Carolina, focusing on the aspect of quality. As 82% of the respondents said, at equal prices, they would rather buy SC grown products and 79%, at equal prices, would rather buy SC produced animal products.
- Respondents indicated that their main motivation is to help SC farmers (36%) and to support the State's economy (25%). These two factors could be included in the campaign advertising in order to get more people involved and participating on it.
- In a year, 48% of the people visit the Farmers' Market 1-5 times. In a typical visit, the majority (54%) spends more on produce, with an average amount of \$21.24/visit. If they had not spent that money in the Farmers' Market, 41% of that money would have been spent in grocery stores, 21% in non-food spending, 18% in restaurants and 20% in savings.

RESTAURANT SURVEY RESULTS

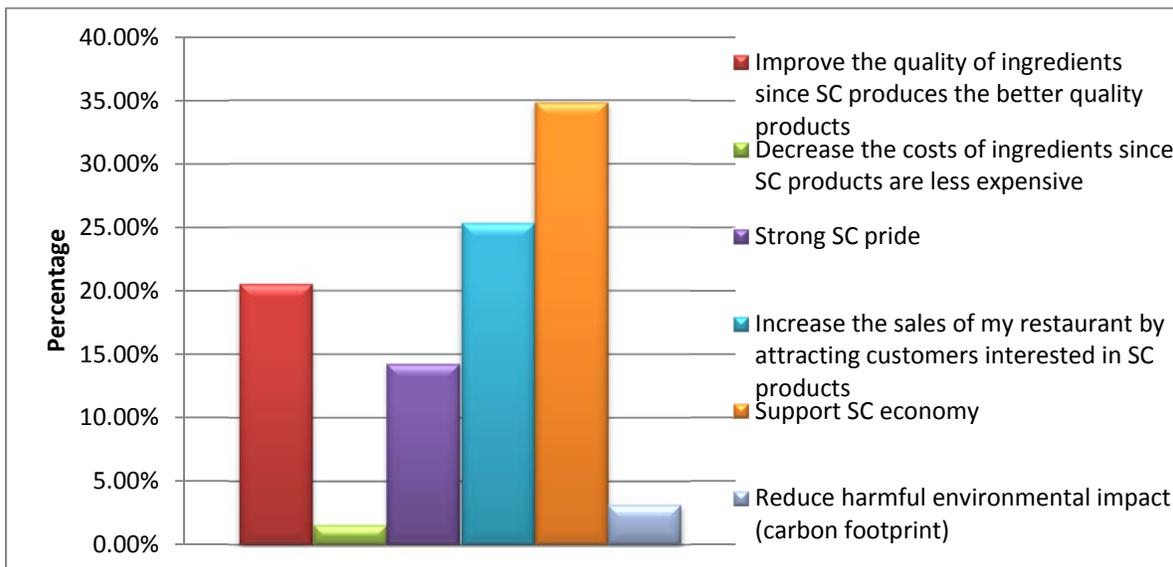
1. How did you learn about the SC “Fresh on the Menu” campaign?

Answer	Response	%
Magazines	2	3.20%
Direct Mailing	6	9.50%
Food service Food show	9	14.30%
Direct contact from the SDA website	17	27.00%
Fresh on the Menu website	10	15.90%
Other Restaurants	4	6.40%
Other	15	23.80%
TOTAL	63	100%



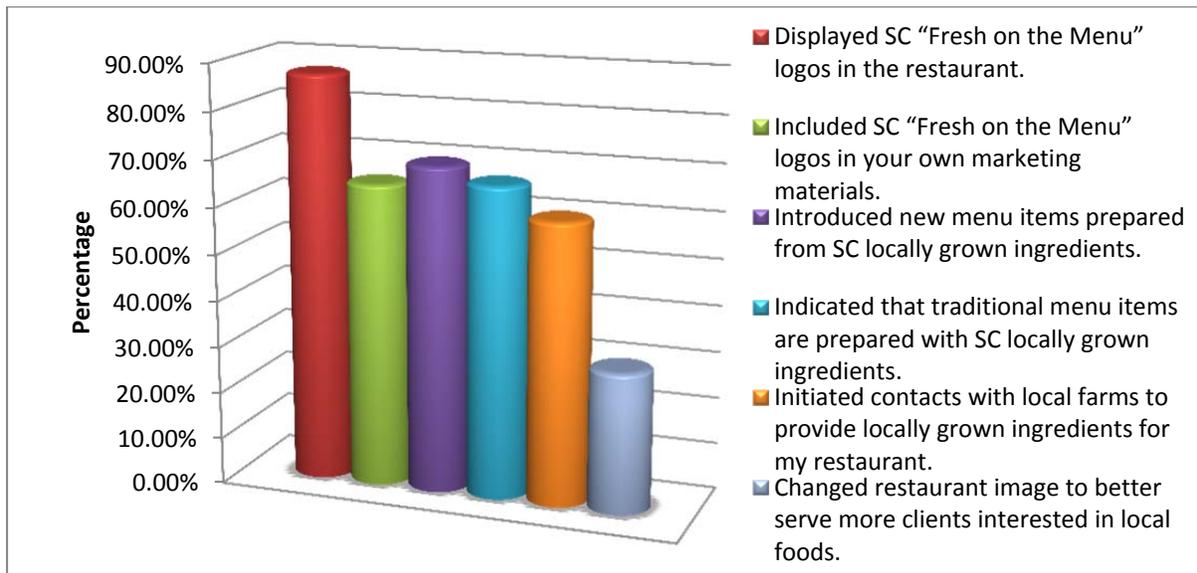
2. Which of the following reasons was the most important motivation for you to join the SC "Fresh on the Menu" campaign?

Answer	Response	%
Improve the quality of ingredients since SC produces the better quality products	13	20.60%
Decrease the costs of ingredients since SC products are less expensive	1	1.60%
Strong SC pride	9	14.30%
Increase the sales of my restaurant by attracting customers interested in SC products	16	25.40%
Support SC economy	22	34.90%
Reduce harmful environmental impact (carbon footprint)	2	3.20%
TOTAL	63	100%



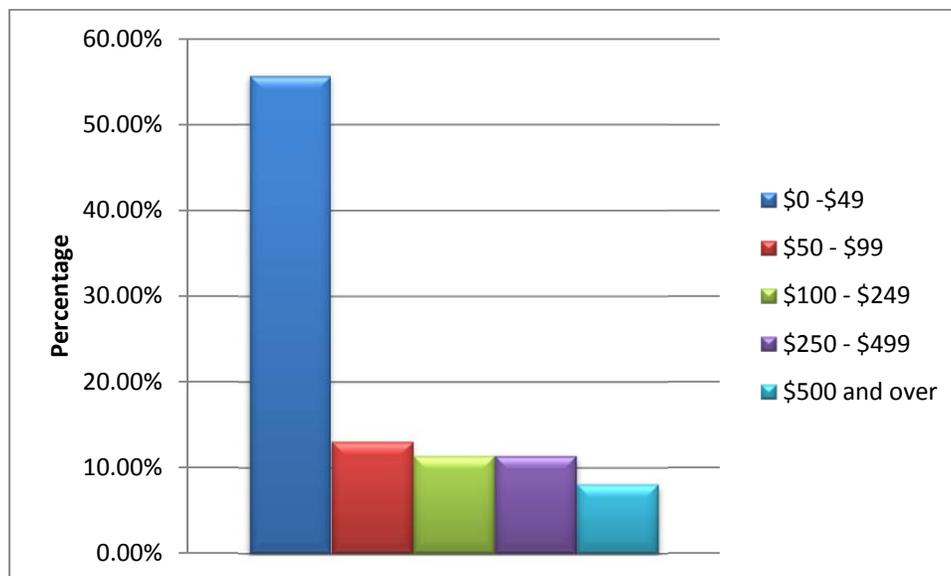
3. Please describe how you participated in the SC "Fresh on the Menu" campaign in the last year. (Please check all that apply.)

Answer	Response	%
Displayed SC "Fresh on the Menu" logos in the restaurant.	55	87.30%
Included SC "Fresh on the Menu" logos in your own marketing materials.	41	65.10%
Introduced new menu items prepared from SC locally grown ingredients.	44	69.80%
Indicated that traditional menu items are prepared with SC locally grown ingredients.	42	66.70%
Initiated contacts with local farms to provide locally grown ingredients for my restaurant.	38	60.30%
Changed restaurant image to better serve more clients interested in local foods.	19	30.20%



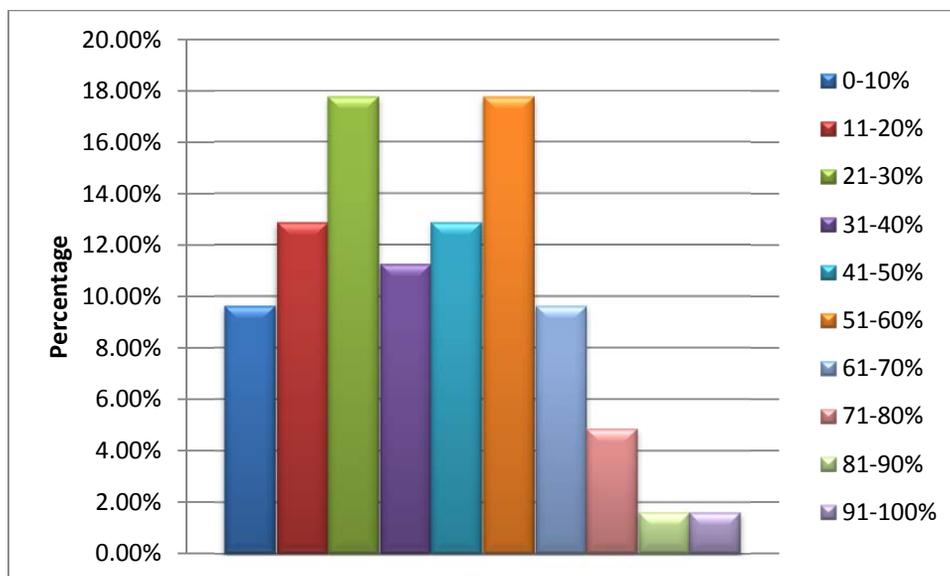
4. Please describe the costs of your participation in the SC “Fresh on the Menu” campaign in the last year (e.g. costs of changing menus due to display local foods).

Answer	Response	%
\$0 - \$49	34	55.77%
\$50 - \$99	8	13.12%
\$100 - \$249	7	11.46%
\$250 - \$499	7	11.46%
\$500 and over	5	8.16%
TOTAL	61	100%



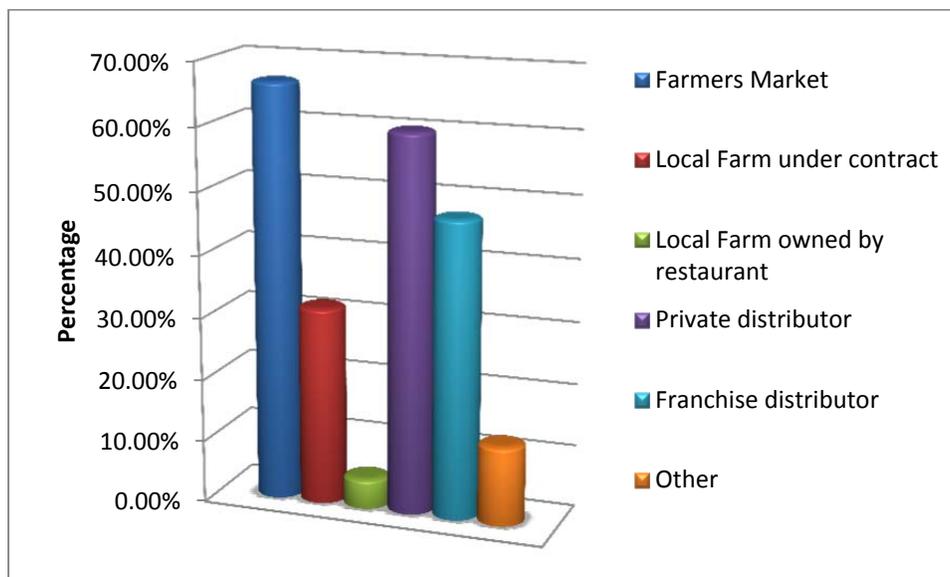
5. What proportion of your menu items are marketed as prepared from locally grown products in the last year?

Answer	Response	%
0-10%	6	9.65%
11-20%	8	12.90%
21-30%	11	17.78%
31-40%	7	11.28%
41-50%	8	12.90%
51-60%	11	17.78%
61-70%	6	9.65%
71-80%	3	4.88%
81-90%	1	1.63%
91-100%	1	1.63%
TOTAL	51	100%



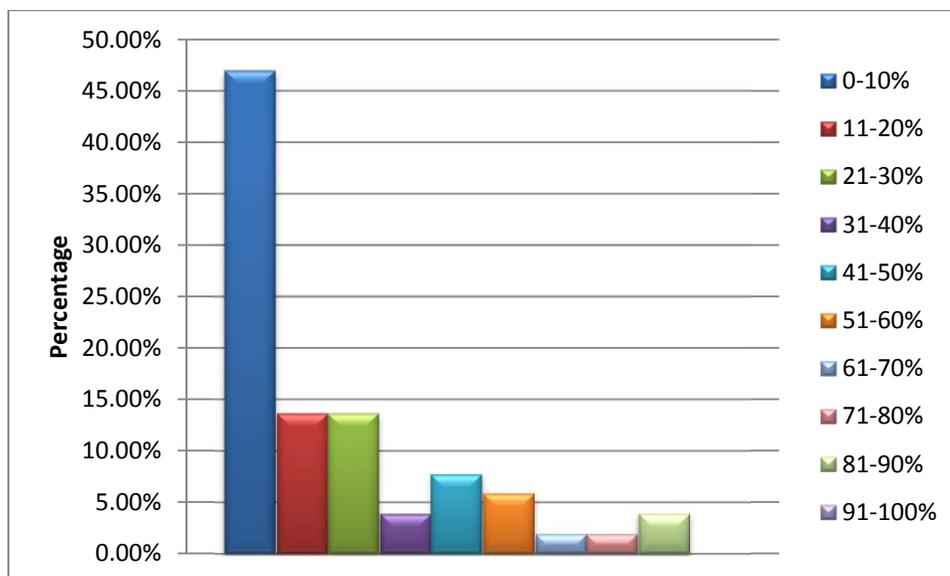
6. What marketing channels did you use last year to purchase your locally grown products? (Please check all that apply.)

Answer	Response	%
Farmers Market	42	66.70%
Local Farm under contract	20	31.80%
Local Farm owned by restaurant	3	4.80%
Private distributor	38	60.30%
Franchise distributor	30	47.60%
Other	8	12.70%



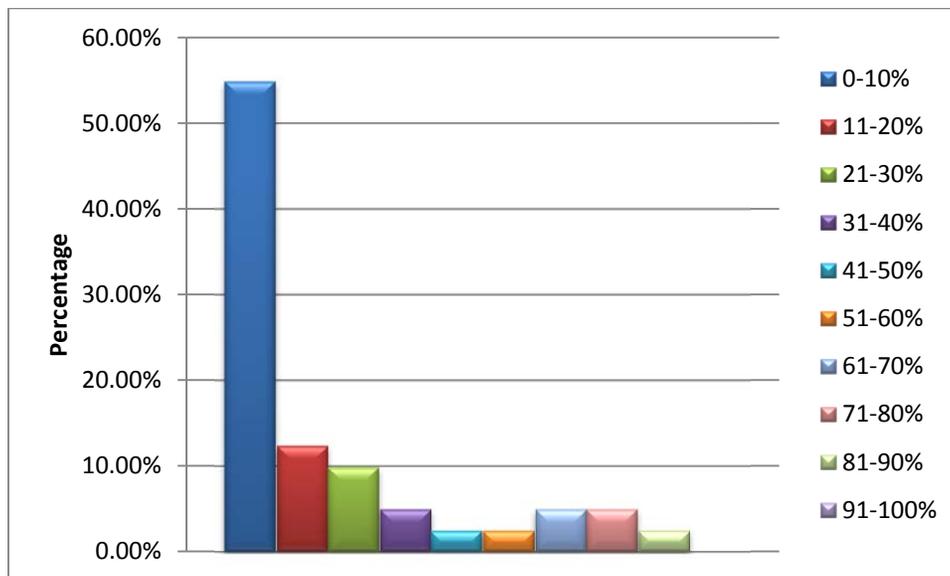
7. What percentage of locally grown products do you get for your restaurant from Farmers Markets?

Answer	Response	%
0-10%	24	47.06%
11-20%	7	13.71%
21-30%	7	13.71%
31-40%	2	3.95%
41-50%	4	7.78%
51-60%	3	5.93%
61-70%	1	1.98%
71-80%	1	1.98%
81-90%	2	3.95%
91-100%	0	0%
TOTAL	51	100%



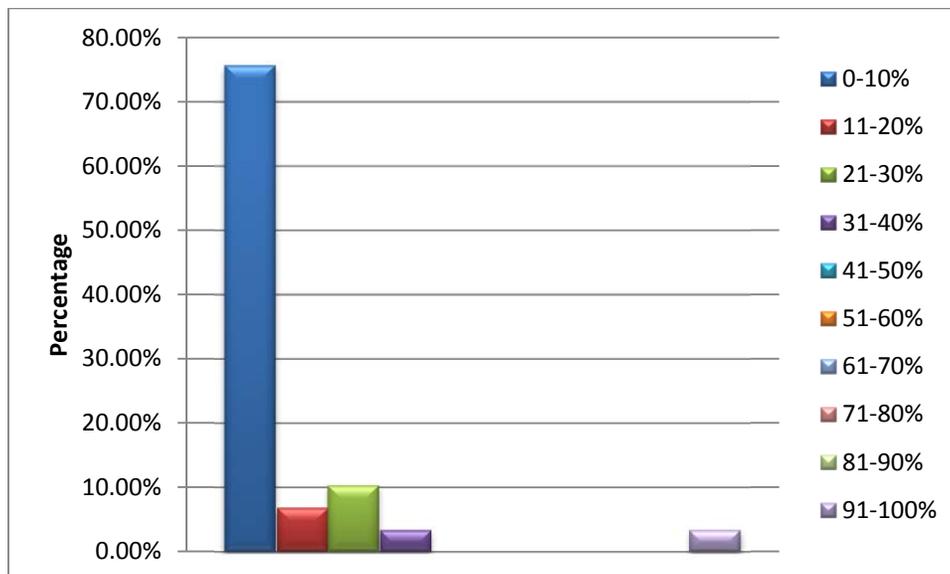
8. What percentage of locally grown products do you get for your restaurant from Local Farms under contract?

Answer	Response	%
0-10%	22	54.97%
11-20%	5	12.44%
21-30%	4	9.92%
31-40%	2	5.04%
41-50%	1	2.52%
51-60%	1	2.52%
61-70%	2	5.04%
71-80%	2	5.04%
81-90%	1	2.52%
91-100%	0	0%
TOTAL	40	100%



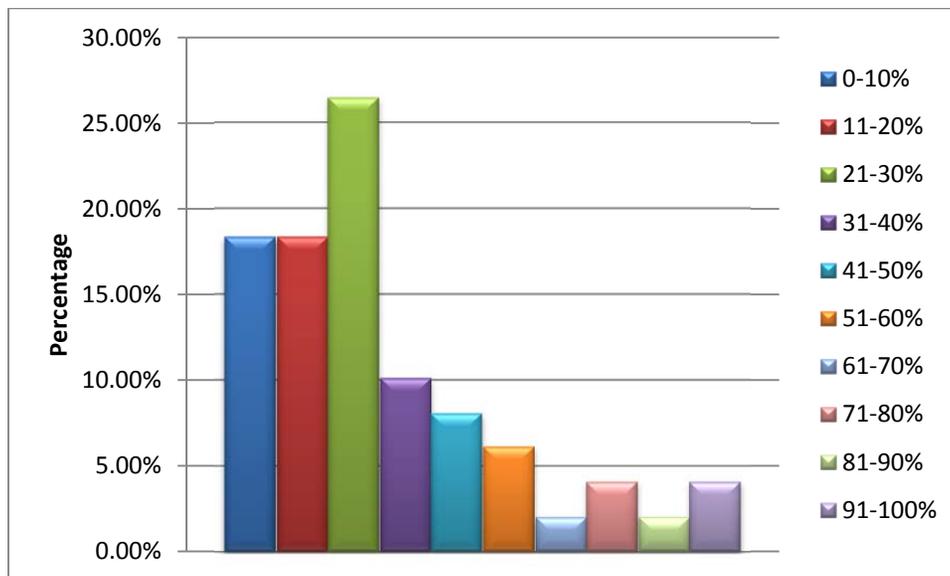
9. What percentage of locally grown products do you get for your restaurant from Local Farms owned by restaurant?

Answer	Response	%
0-10%	22	75.82%
11-20%	2	6.95%
21-30%	3	10.43%
31-40%	1	3.48%
41-50%	0	0.00%
51-60%	0	0.00%
61-70%	0	0.00%
71-80%	0	0.00%
81-90%	0	0.00%
91-100%	1	3.48%
TOTAL	29	100%



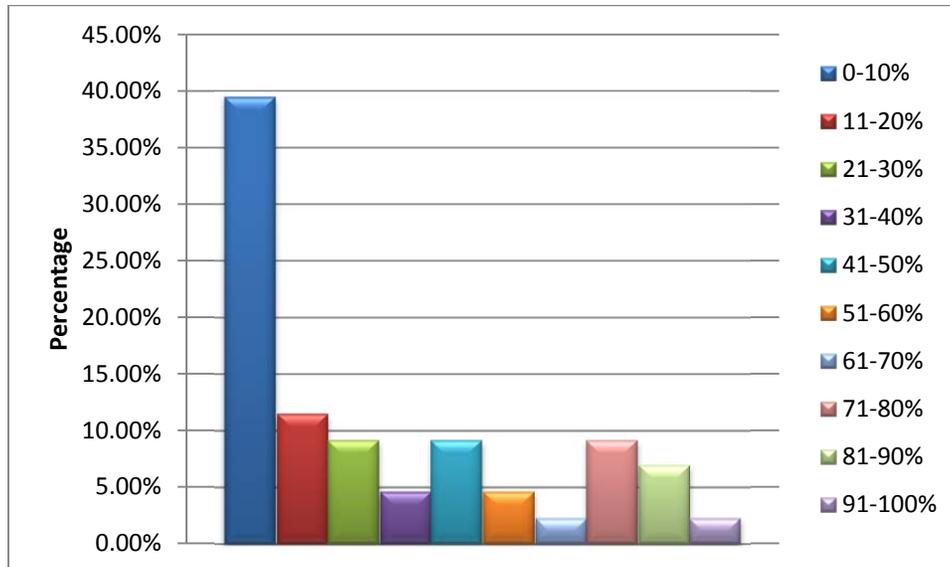
10. What percentage of locally grown products do you get for your restaurant from Private Distributors?

Answer	Response	%
0-10%	9	18.39%
11-20%	9	18.39%
21-30%	13	26.49%
31-40%	5	10.16%
41-50%	4	8.10%
51-60%	3	6.17%
61-70%	1	2.06%
71-80%	2	4.11%
81-90%	1	2.06%
91-100%	2	4.11%
TOTAL	49	100



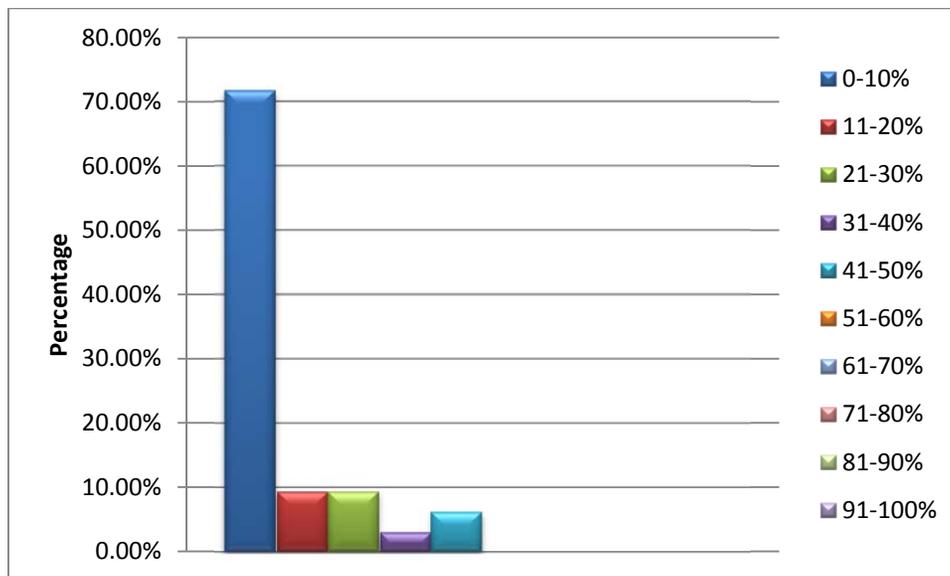
11. What percentage of locally grown products do you get for your restaurant from Franchise Distributors?

Answer	Response	%
0-10%	17	39.56%
11-20%	5	11.57%
21-30%	4	9.23%
31-40%	2	4.69%
41-50%	4	9.23%
51-60%	2	4.69%
61-70%	1	2.34%
71-80%	4	9.23%
81-90%	3	7.03%
91-100%	1	2.34%
TOTAL	43	100



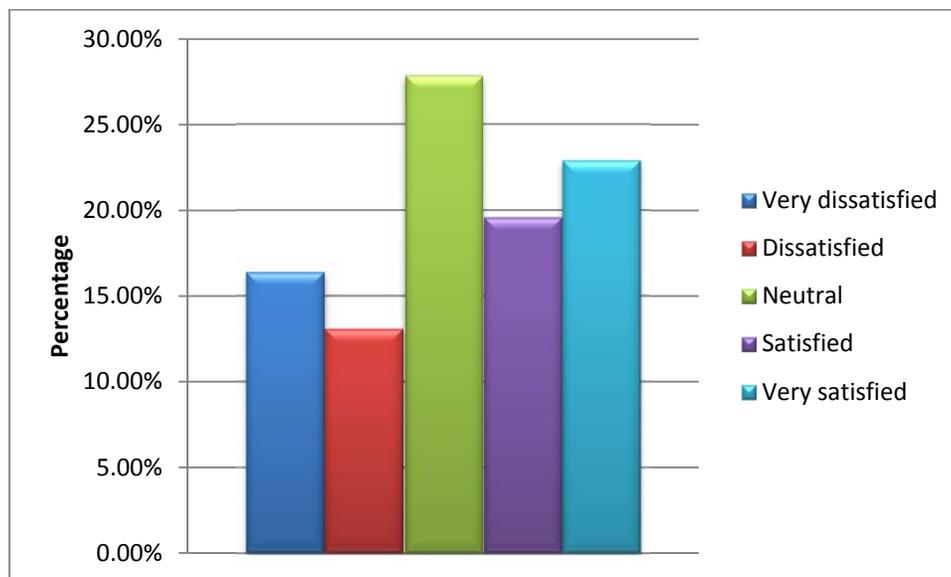
12. What percentage of locally grown products do you get for your restaurant from other marketing channels?

Answer	Response	%
0-10%	23	71.86%
11-20%	3	9.45%
21-30%	3	9.45%
31-40%	1	3.15%
41-50%	2	6.30%
51-60%	0	0.00%
61-70%	0	0.00%
71-80%	0	0.00%
81-90%	0	0.00%
91-100%	0	0.00%
TOTAL	32	100



13. How would you rate your overall satisfaction with the campaign?

Answer	Response	%
Very dissatisfied	10	16.42%
Dissatisfied	8	13.12%
Neutral	17	27.89%
Satisfied	12	19.62%
Very satisfied	14	22.93%
TOTAL	61	100



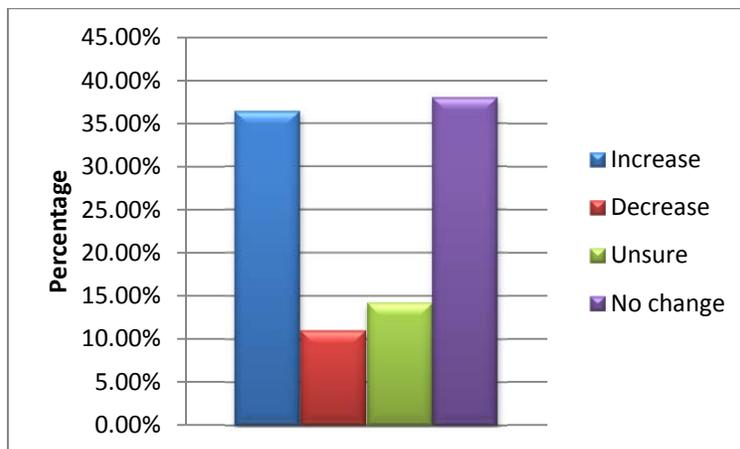
14. Do you have any comments or suggestions that may improve the quality and efficiency of the SC "Fresh on the Menu" campaign?

The suggestions given are presented below:

- More events with individual restaurants in Columbia.
- It would be beneficial to everyone involved if this is expanded to a regional campaign. Try to find a way to work with and incorporate farms in NC, southern VA, north Georgia, and north Florida. It would find a much broader range of quality products and more farmers committed to providing a product we can all be proud of.
- Featured restaurants in specific markets done through SC fresh advertising.
- Not sure that enough is being done to reach out to other healthcare food service operations to encourage their involvement and participation.
- Just wanted to thank Diana Vossbrinck for her help and dedication to helping us with being part of this great campaign.
- Should have more interaction/networking opportunities with local farmers.
- Add television exposure for the campaign and "Fresh on the Menu" for SC schools and education on our local farms.
- Get more farmers GAP certified and help them understand how important it is that they be certified.
- The franchise distributors are still lagging in getting SC products--they focus on price and not region.
- Keep moving forward and offering more diverse items.
- Keep doing what you do.
- If you are signed up for this program, distributors should have the chef bookmarked for any and all local products to be in a product list, or sent to them on a weekly basis of what is available.
- More recognition from participating restaurants on hospitality and/or chamber of commerce websites and other printed material.
- More commercial advertising. Maybe even some attractive signage (but not unsightly Interstate Billboards).
- Do more advertising with Local Restaurants that serve Local products (Billboards, Print Ads, Radio Spots, TV, etc.)
- Need tent cards, posters, in house promo, menu stickers easier to order.

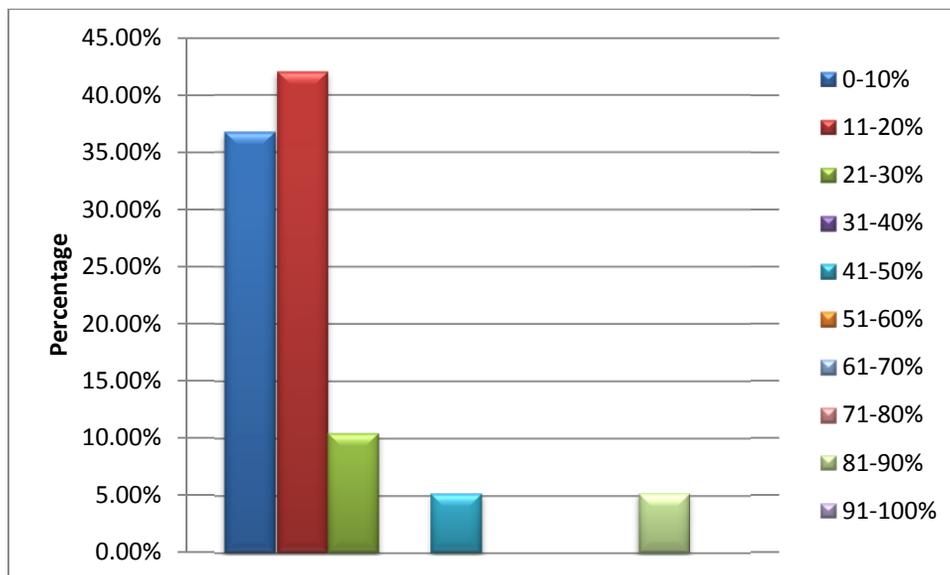
15. How do you think the SC “Fresh on the Menu” campaign affected your costs of purchasing ingredients and food preparation in the last year?

Answer	Response	%
Increase	23	36.50%
Decrease	7	11.10%
Unsure	9	14.30%
No change	24	38.10%
TOTAL	63	100



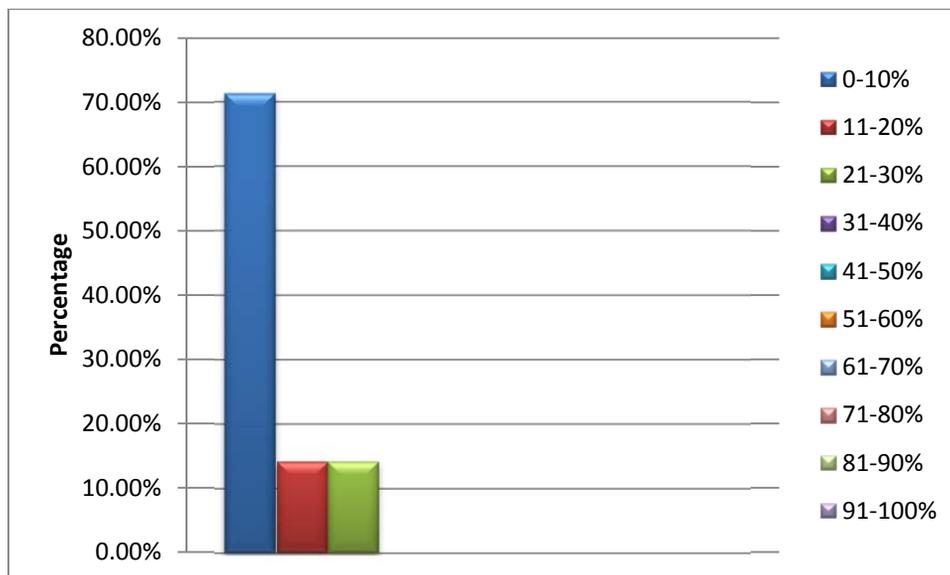
16. What percentage increase do you think the SC “Fresh on the Menu” campaign affected your costs of purchasing ingredients and food preparation in the last year?

Answer	Response	%
0-10%	7	36.84%
11-20%	8	42.11%
21-30%	2	10.53%
31-40%	0	0
41-50%	1	5.26%
51-60%	0	0
61-70%	0	0
71-80%	0	0
81-90%	1	5.26%
91-100%	0	0
TOTAL	19	100



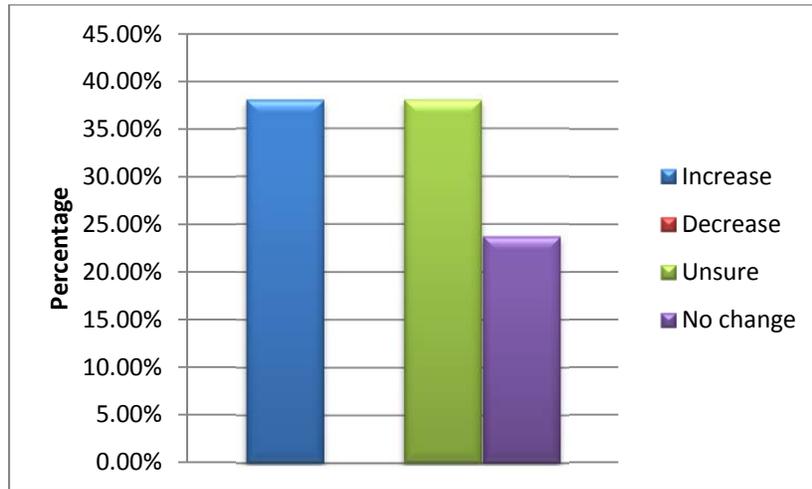
17. What percentage decrease do you think the SC “Fresh on the Menu” campaign affected your costs of purchasing ingredients and food preparation in the last year?

Answer	Response	%
0-10%	5	71.43%
11-20%	1	14.29%
21-30%	1	14.29%
31-40%	0	0
41-50%	0	0
51-60%	0	0
61-70%	0	0
71-80%	0	0
81-90%	0	0
91-100%	0	0
TOTAL	7	100



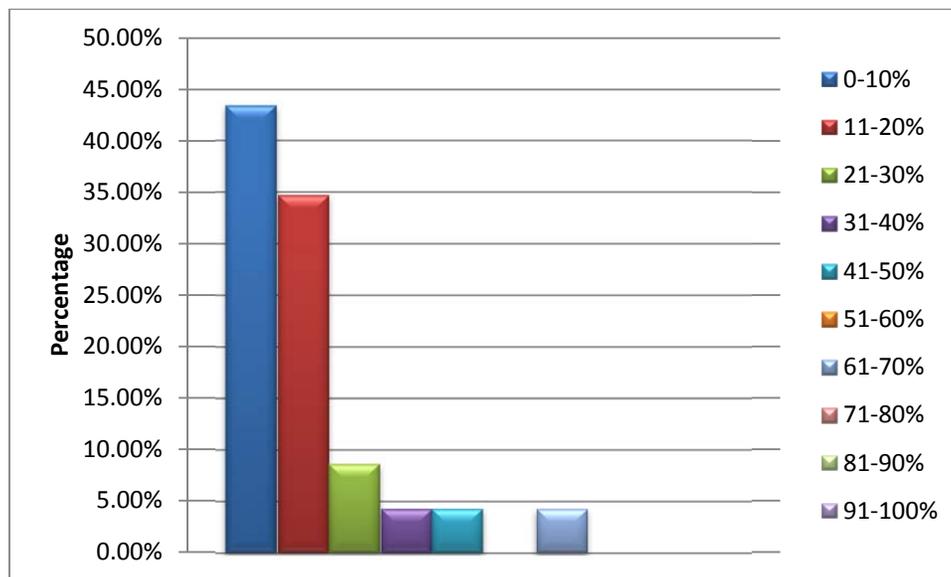
18. How do you think the SC "Fresh on the Menu" campaign affected your total sales during the last year?

Answer	Response	%
Increase	24	38.10%
Decrease	0	0.00%
Unsure	24	38.10%
No change	15	23.80%
TOTAL	63	100



19. What percentage increase do you think the SC “Fresh on the Menu” campaign affected your total sales during the last year?

Answer	Response	%
0-10%	10	43.48%
11-20%	8	34.78%
21-30%	2	8.70%
31-40%	1	4.35%
41-50%	1	4.35%
51-60%	0	0
61-70%	1	4.35%
71-80%	0	0
81-90%	0	0
91-100%	0	0
TOTAL	23	100

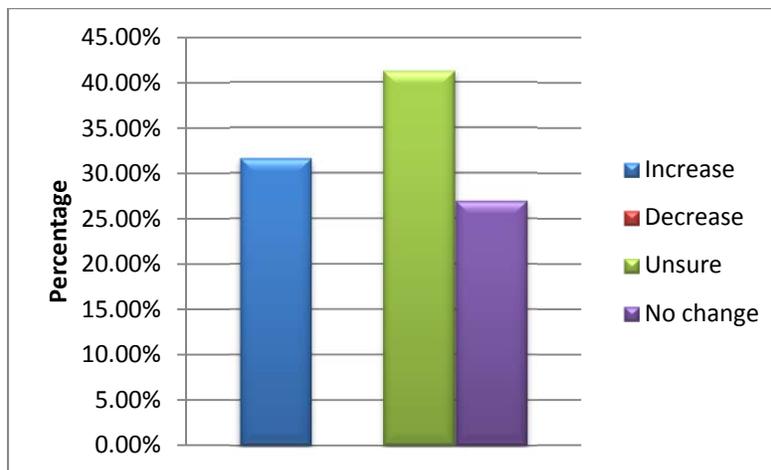


20. What percentage decrease do you think the SC “Fresh on the Menu” campaign affected your total sales during the last year?

NONE ANSWERED

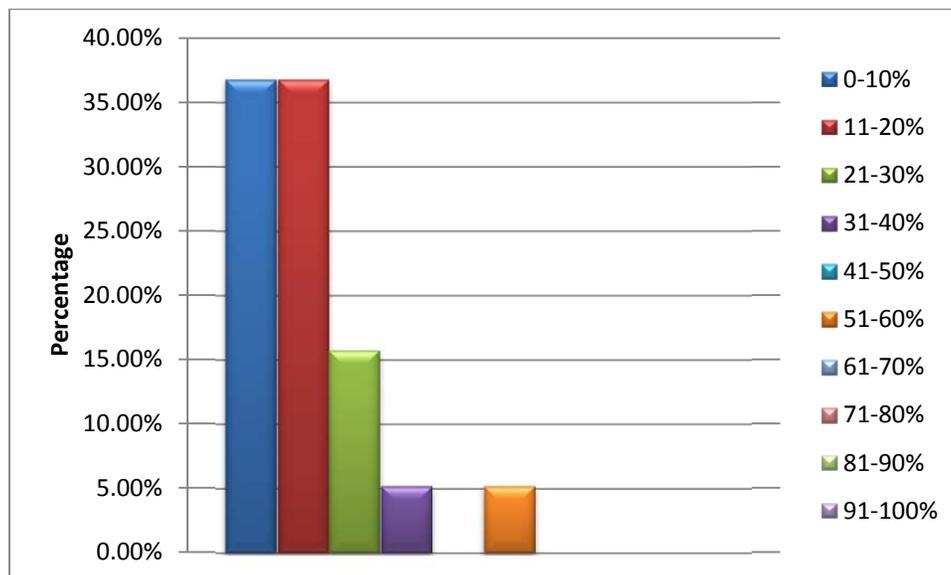
21. How do you think the SC “Fresh on the Menu” campaign affected the number of clientele visiting your restaurant in the last year?

Answer	Response	%
Increase	20	31.70%
Decrease	0	0.00%
Unsure	26	41.30%
No change	17	27.00%
TOTAL	63	100



22. What percentage increase do you think the SC “Fresh on the Menu” campaign affected the number of clientele visiting your restaurant in the last year?

Answer	Response	%
0-10%	7	36.84%
11-20%	7	36.84%
21-30%	3	15.79%
31-40%	1	5.26%
41-50%	0	0
51-60%	1	5.26%
61-70%	0	0
71-80%	0	0
81-90%	0	0
91-100%	0	0
TOTAL	19	100

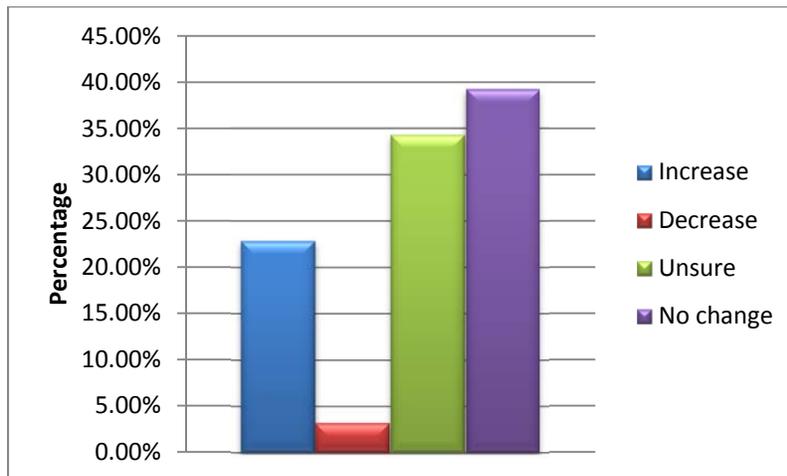


23. What percentage decrease do you think the SC “Fresh on the Menu” campaign affected the number of clientele visiting your restaurant in the last year?

NONE ANSWERED

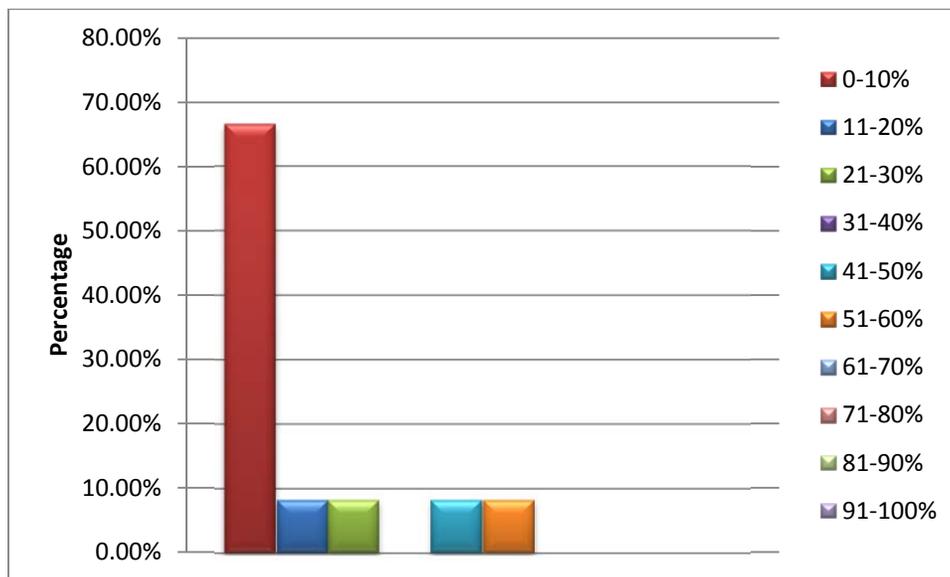
24. How do you think the SC "Fresh on the Menu" campaign affected the profitability of your restaurant in the last year?

Answer	Response	%
Increase	14	22.93%
Decrease	2	3.30%
Unsure	21	34.39%
No change	24	39.34%
TOTAL	61	100



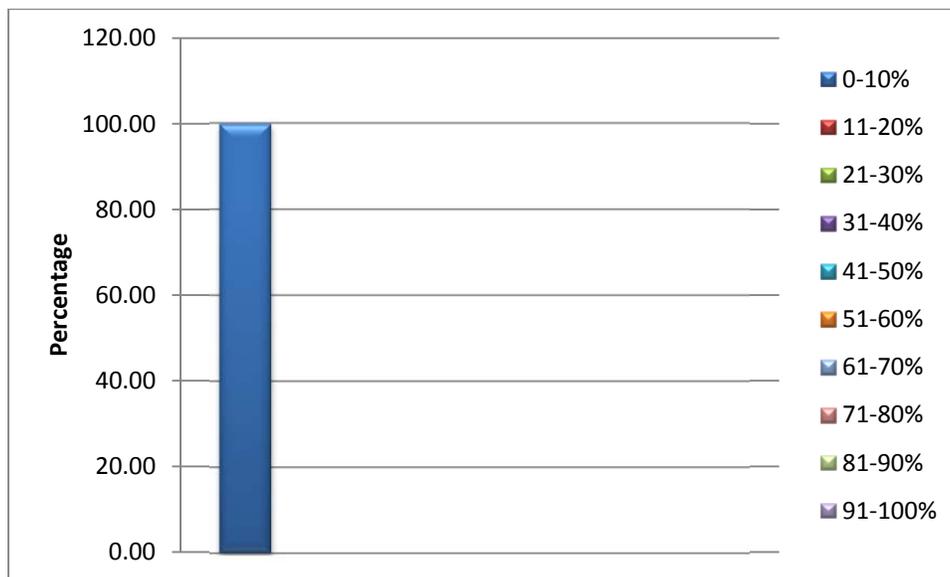
25. What percentage increase do you think the SC “Fresh on the Menu” campaign affected the profitability of your restaurant in the last year?

Answer	Response	%
0-10%	8	66.67%
11-20%	1	8.33%
21-30%	1	8.33%
31-40%	0	0
41-50%	1	8.33%
51-60%	1	8.33%
61-70%	0	0
71-80%	0	0
81-90%	0	0
91-100%	0	0
TOTAL	12	100



26. What percentage decrease do you think the SC “Fresh on the Menu” campaign affected the profitability of your restaurant in the last year?

Answer	Response	%
0-10%	2	100
11-20%	0	0
21-30%	0	0
31-40%	0	0
41-50%	0	0
51-60%	0	0
61-70%	0	0
71-80%	0	0
81-90%	0	0
91-100%	0	0
TOTAL	2	100

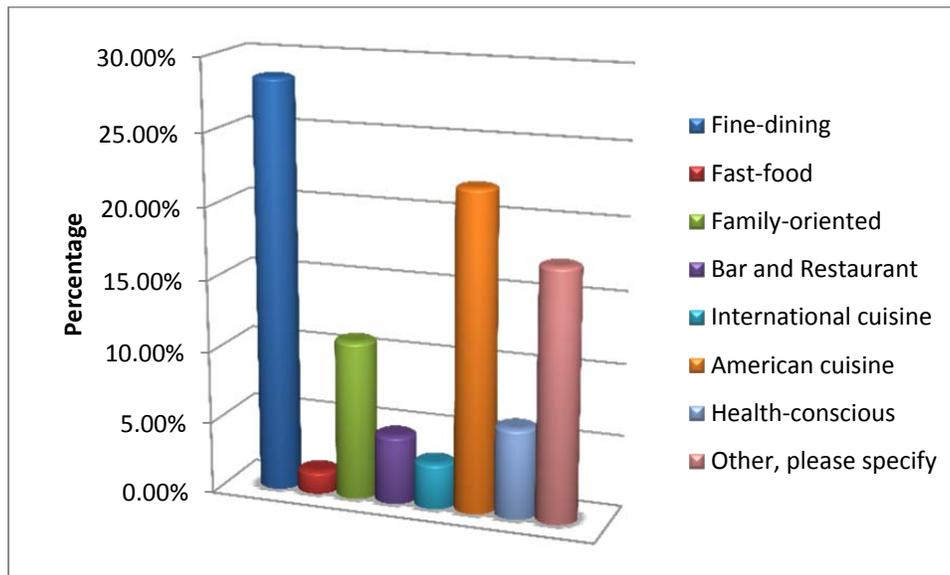


27. What is the zip code where your restaurant is located?

ZIP code	Frequency	ZIP code	Frequency
29063	1	29572	1
29129	1	20577	1
29142	1	29585	1
29201	4	29601	1
29203	1	29605	1
29205	3	29621	1
29208	1	29642	1
20303	1	29730	1
20325	1	29801	1
29449	1	29812	1
29492	1	29920	1
29501	1	29928	2
29526	1	29935	1
29550	1		

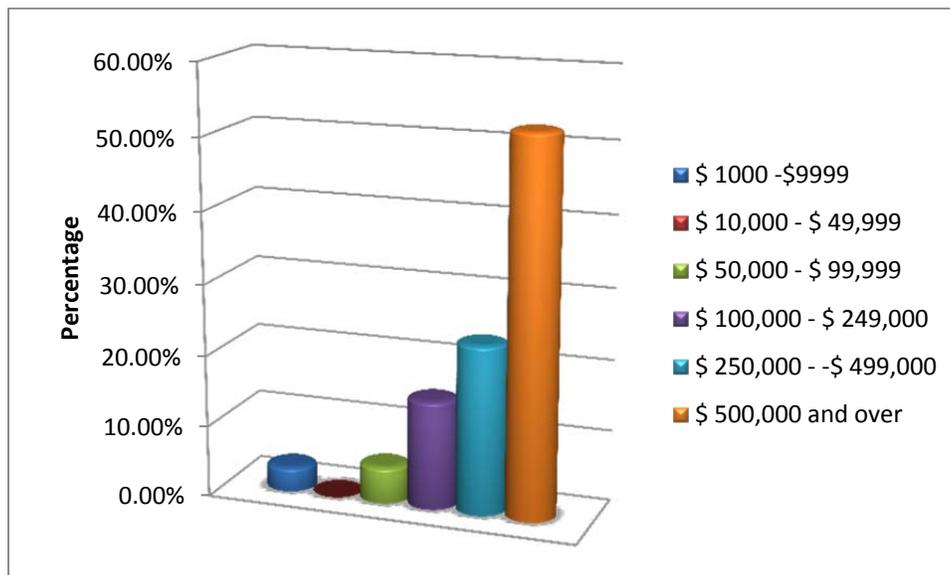
28. How would you best describe the focus/image of your restaurant?

Answer	Response	%
Fine-dining	18	28.60%
Fast-food	1	1.60%
Family-oriented	7	11.10%
Bar and Restaurant	3	4.80%
International cuisine	2	3.20%
American cuisine	14	22.20%
Health-conscious	4	6.30%
Other, please specify	11	17.50%
TOTAL	60	100%



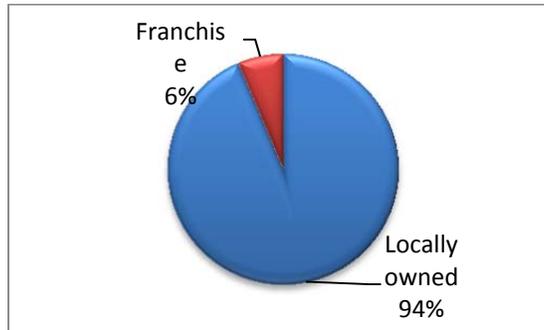
29. Please describe the size of your restaurant business in 2009 in terms of total annual sales (before deducting business expenses).

Answer	Response	%
\$ 1000 - \$9999	2	3.42%
\$ 10,000 - \$ 49,999	0	0%
\$ 50,000 - \$ 99,999	3	5.13%
\$ 100,000 - \$ 249,000	9	15.27%
\$ 250,000 - -\$ 499,000	14	23.71%
\$ 500,000 and over	31	52.54%
TOTAL	59	100



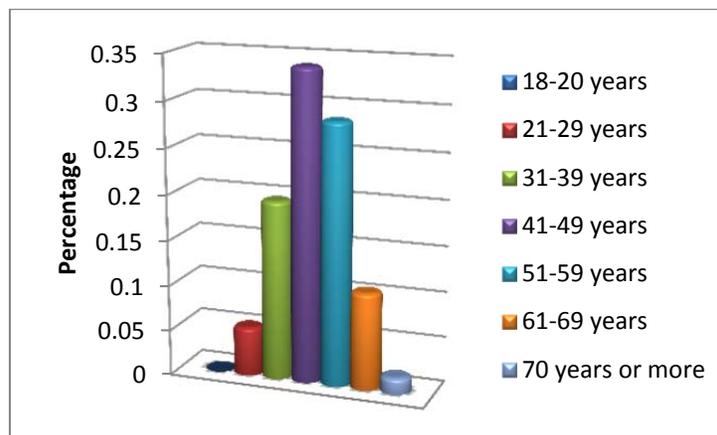
30. How would you best describe the ownership of your restaurant?

Answer	Response	%
Locally owned	58	93.59%
Franchise	4	6.40%
TOTAL	62	100



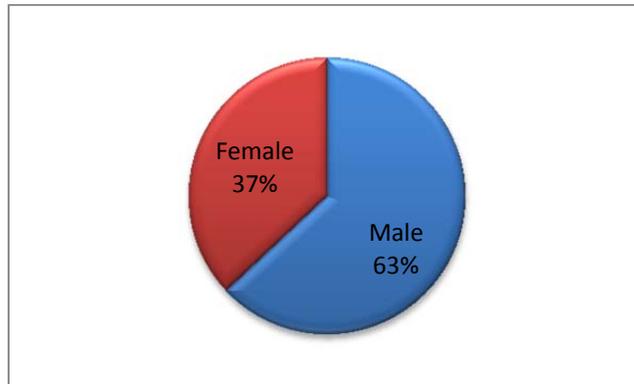
31. Age

Answer	Response	%
18-20 years	0	0
21-29 years	3	5.40%
31-39 years	11	19.69%
41-49 years	19	33.98%
51-59 years	16	28.58%
61-69 years	6	10.69%
70 years or more	1	1.80%
TOTAL	56	100



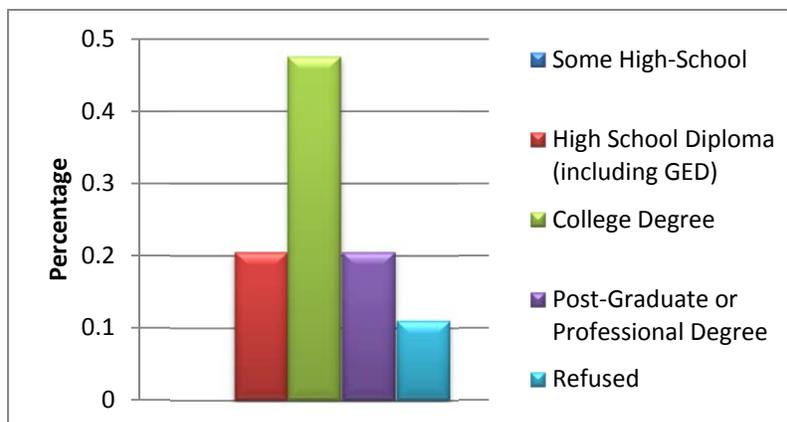
32. Gender

Answer	Response	%
Male	34	54.00%
Female	20	31.70%
TOTAL	54	100



33. Highest level of Education

Answer	Response	%
Some High-School	0	0
High School Diploma (including GED)	13	20.60%
College Degree	30	47.60%
Post-Graduate or Professional Degree	13	20.60%
Refused	7	11.10%
TOTAL	63	100



RESULTS OF THE SURVEY

This survey was conducted among people who own restaurants as businesses. 28.6% described their restaurant as fine dining and 22.2% as American cuisine, among other descriptions. 53.6% indicated a size in total annual sales (before deducting business expenses) of \$ 500,000 and over and 93.6% said that the restaurants are locally owned. The ages of the people surveyed varies from 18 to 70 years and more. Sixty-three percent were male and 37% female. The results were as follows:

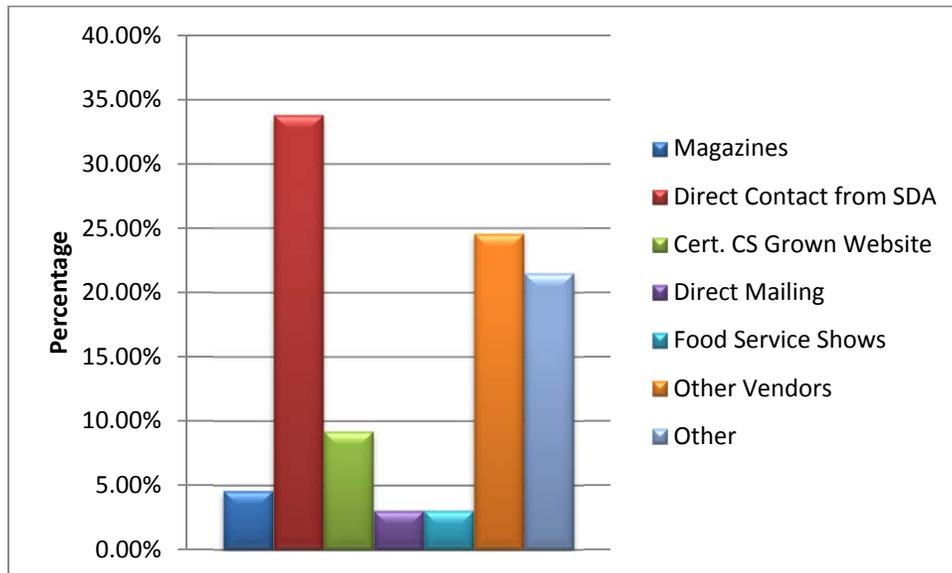
- Of all the respondents, 15.9% found out about the Fresh on the Menu (FOTM) campaign from the FOTM website, a 27% from through direct contact from the State Department of Agriculture and another 23.8% learned from other sources. However these sources were not specified. Thirty-five percent answered that their main motivation to join the campaign was to support SC economy and 25.4% said indicated that they wanted to increase their restaurants' sales.
- Fifty-six percent indicated that their costs from the last year due to their participation in the campaign ranged from \$0-\$49, and 17.8% of the people surveyed said that 21-30% of their menu items were marketed as locally grown products and 17.8% said that 51-60% of their menu items were marketed as locally grown products. The most used marketing channel to purchase locally grown products by restaurants is the Farmers market (66.7%). The proportion of the use of this channel is high (47.06% of respondents get 0-10% of their products from the farmers markets) compared to the proportion of people who get their locally products elsewhere. But there is an interesting situation with the marketing channels
- Thirty-seven percent (19 responses) of the people answered that there was an increase in the costs of purchasing ingredients and food preparation over the last year; Of the 19 responses, 36.8% perceived that increment ranged in 0-10% and 42.1% ranged the increment in 11-20%. Out of 7 responses, who answered that there was a decrease in the costs, 71.43% indicated that their costs of purchasing ingredients decreased from 0-10%.
- Of the 24 respondents, who answered that there was an increase in the total sales, 43.5% said that their total sales were increased from 0-10%, and a 34.8% ranged their increment in sales from 11-20%. So indeed, the campaign has raised the sales but has also raised the costs of purchasing the ingredients. Also 31.7% of the people perceived an increment in the number of clientele visiting their restaurants. 23% indicated increment in the profitability of their restaurants and of them. Among those, 67% rated that increment from 0-10% in the last year.
- Forty two percent of respondents are either very satisfied or satisfied with the campaign, while another 30% said that were not satisfied with it.

FARMER'S MARKET
VENDORS' SURVEY RESULTS

SECTION 1

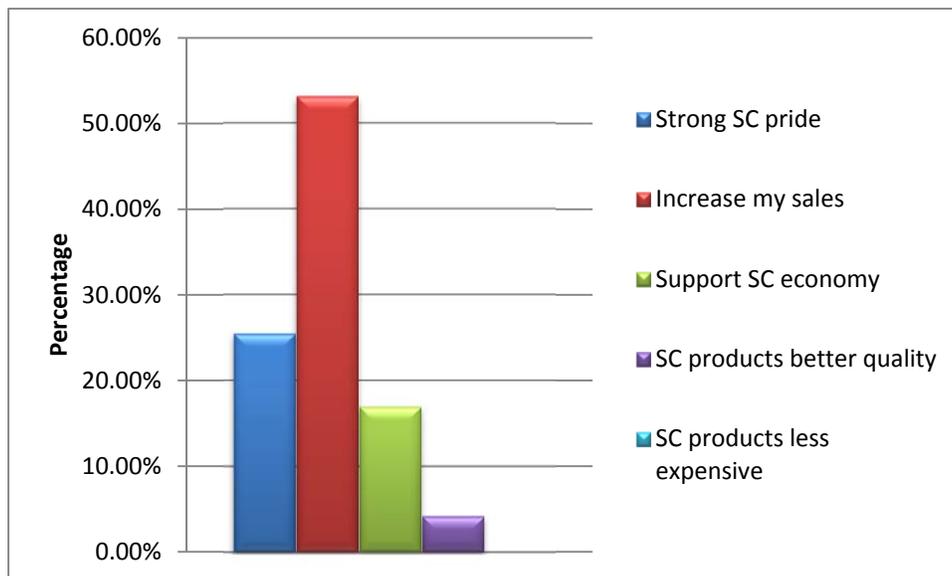
34. How did you learn about the SC Locally Grown campaign?

ANSWER	RESPONSE	%
Magazines	3	4.62%
Direct Contact from SDA	22	33.85%
Cert. CS Grown Website	6	9.23%
Direct Mailing	2	3.08%
Food Service Shows	2	3.08%
Other Vendors	16	24.62%
Other	14	21.54%
TOTAL	65	100%



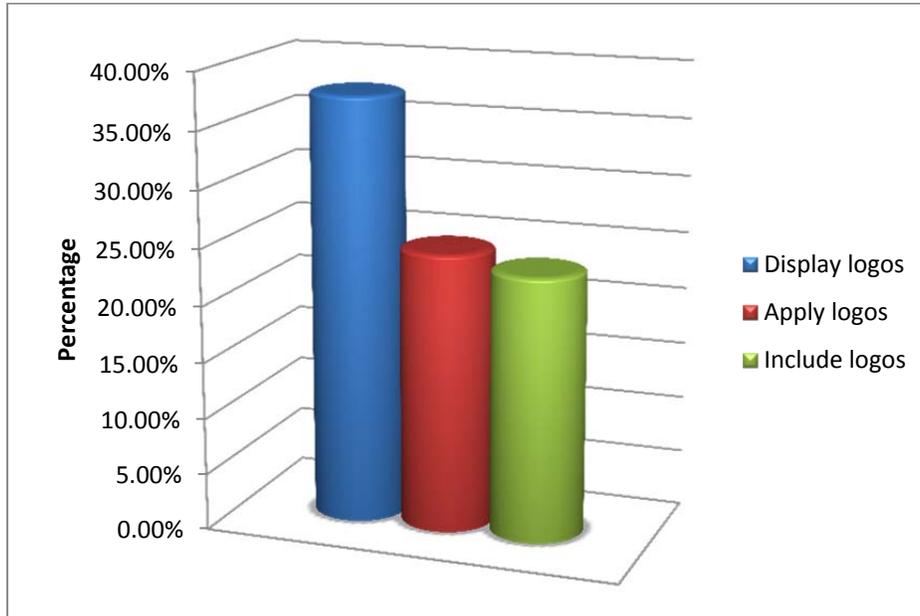
35. Which of the following reasons was the most important motivation for you to join the SC Locally Grown campaign?

ANSWER	RESPONSE	%
Strong SC pride	12	25.53%
Increase my sales	25	53.19%
Support SC economy	8	17.02%
SC products better quality	2	4.26%
SC products less expensive	0	0.00%
TOTAL	47	100%



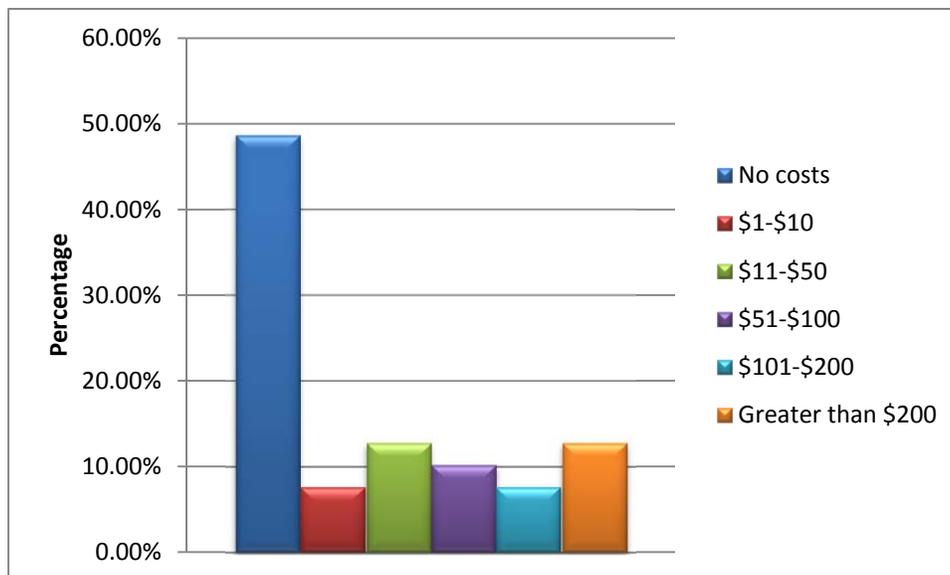
36. Please describe how you participate in the campaign. (Please check all that apply.)

ANSWER	RESPONSE	%
Display logos	29	37.66%
Apply logos	19	24.68%
Include logos	18	23.38%



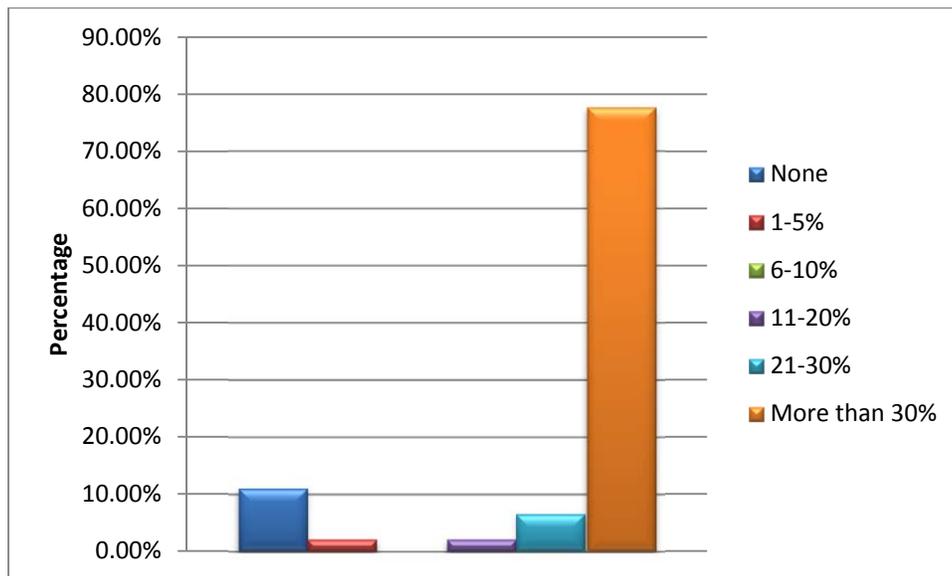
37. Please describe the average annual costs of your participation in the campaign.

ANSWER	RESPONSE	%
No costs	19	48.72%
\$1-\$10	3	7.69%
\$11-\$50	5	12.82%
\$51-\$100	4	10.26%
\$101-\$200	3	7.69%
Greater than \$200	5	12.82%
TOTAL	39	100%



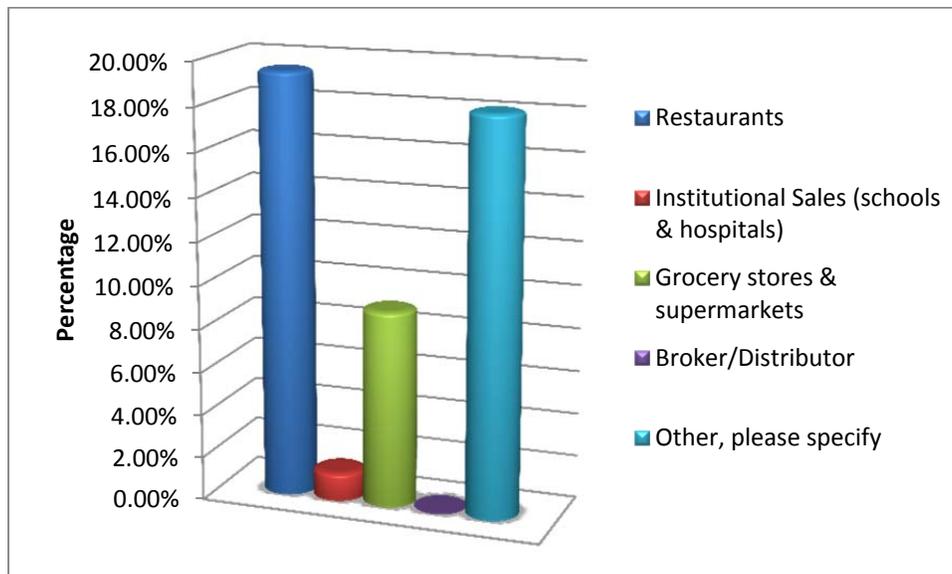
38. What proportion of the products that you sold at SC farmers markets did you market as SC Locally Grown over the last three years?

ANSWER	RESPONSE	%
None	5	11.11%
1-5%	1	2.22%
6-10%	0	0.00%
11-20%	1	2.22%
21-30%	3	6.67%
More than 30%	35	77.78%
TOTAL	45	100%



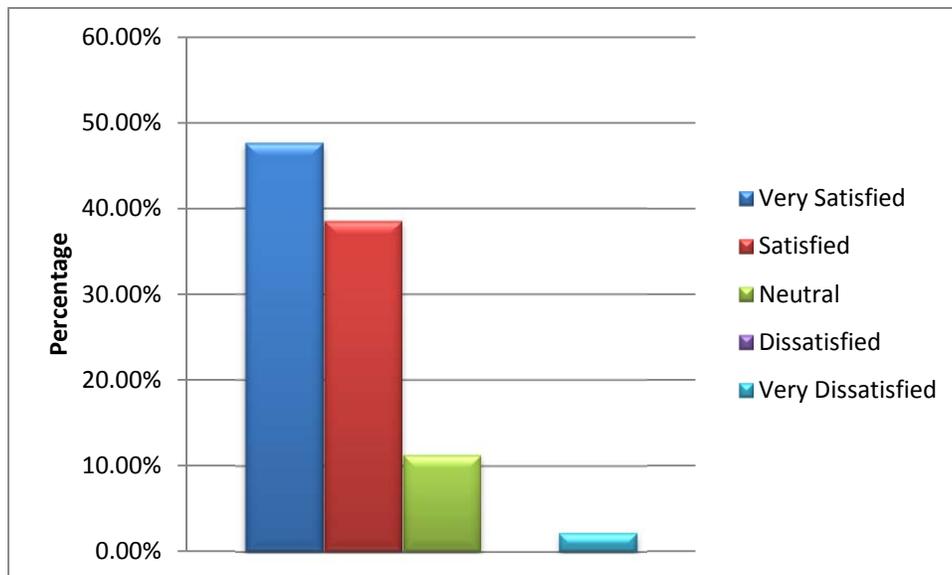
39. What marketing channels other than farmers markets did you use over the last three years to sell your locally grown products? (Please check all that apply.)

ANSWER	RESPONSE	%
Restaurants	15	19.48%
Institutional Sales (schools & hospitals)	1	1.30%
Grocery stores & supermarkets	7	9.09%
Broker/Distributor	0	0.00%
Other, please specify	14	18.18%



40. How would you rate your overall satisfaction with the campaign?

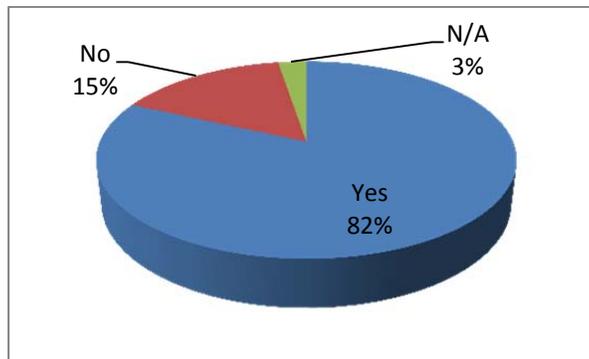
ANSWER	RESPONSE	%
Very Satisfied	21	47.73%
Satisfied	17	38.64%
Neutral	5	11.36%
Dissatisfied	0	0.00%
Very Dissatisfied	1	2.27%
TOTAL	44	100



SECTION 2

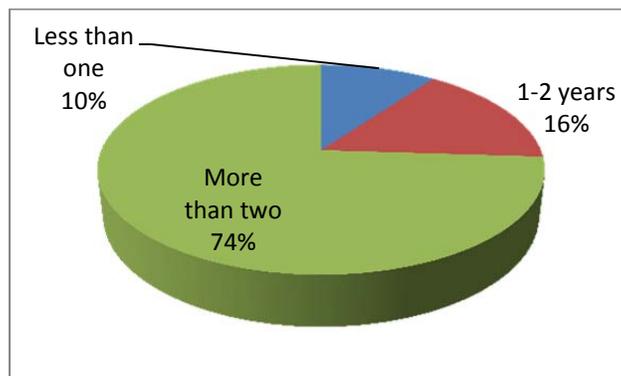
1. Has your farm/business been in operation over the last three years?

ANSWER	RESPONSE	%
Yes	63	81.82%
No	12	15.58%
N/A	2	2.60%
TOTAL	77	100%



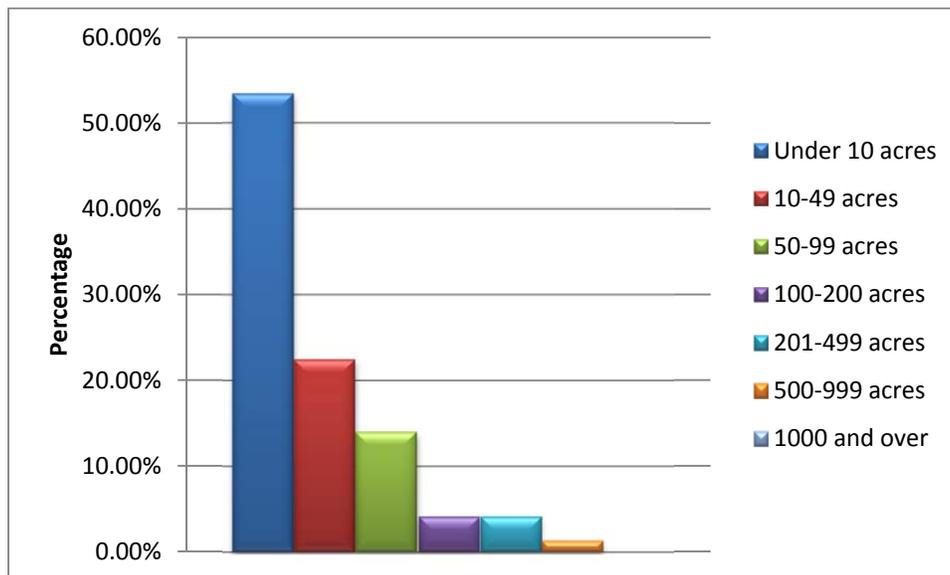
2. Please indicate the number of years your farm has been in operation.

ANSWER	RESPONSE	%
Less than one	5	10%
1-2 years	8	16%
More than two	37	74%
TOTAL	50	100%



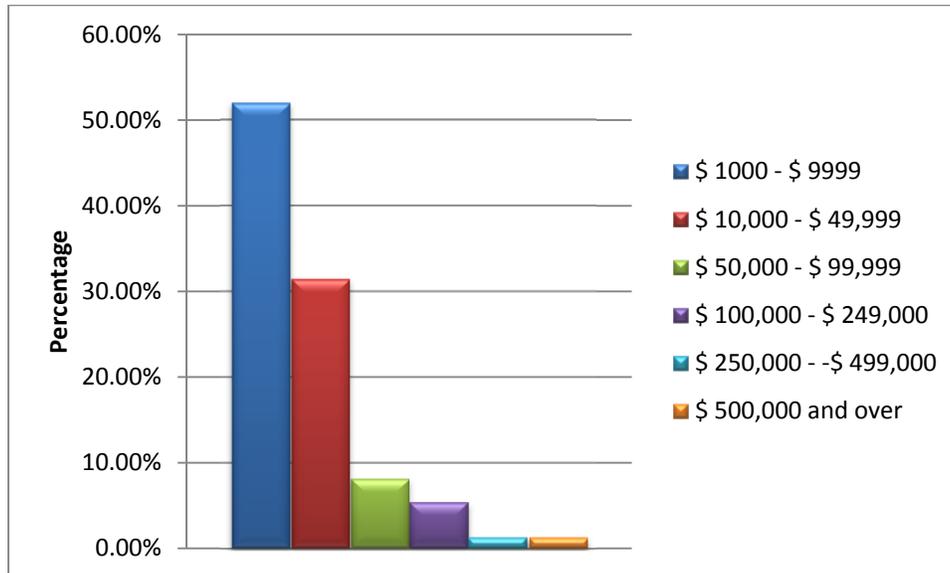
3. Please describe the size of your farm/business in terms of acreage (owned and rented).

ANSWER	RESPONSE	%
Under 10 acres	38	53.52%
10-49 acres	16	22.54%
50-99 acres	10	14.08%
100-200 acres	3	4.23%
201-499 acres	3	4.23%
500-999 acres	1	1.41%
1000 and over	0	0.00%
TOTAL	71	100%



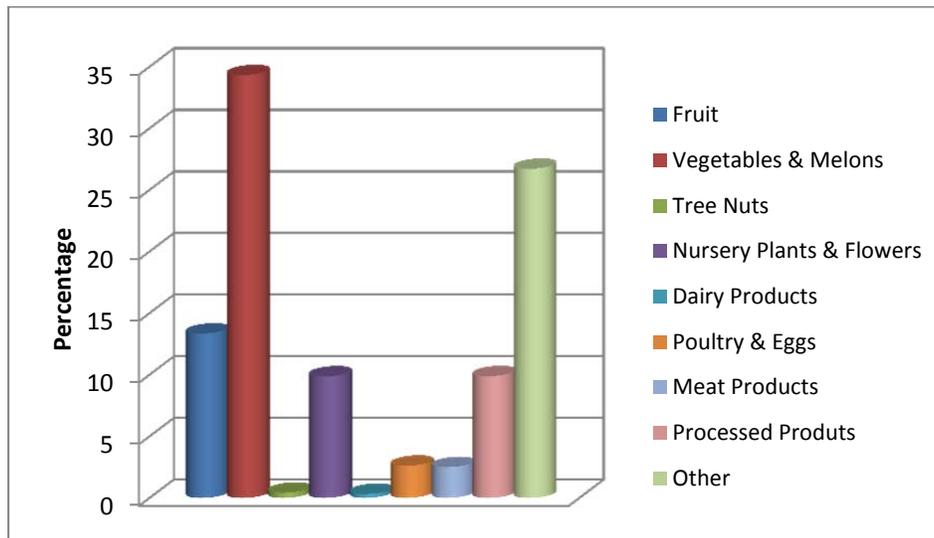
4. Please describe the size of your farm/business in terms of total annual sales (before deducting expenses).

ANSWER	RESPONSE	%
\$ 1000 - \$ 9999	38	52.05%
\$ 10,000 - \$ 49,999	23	31.51%
\$ 50,000 - \$ 99,999	6	8.22%
\$ 100,000 - \$ 249,000	4	5.48%
\$ 250,000 - -\$ 499,000	1	1.37%
\$ 500,000 and over	1	1.37%
TOTAL	73	100%



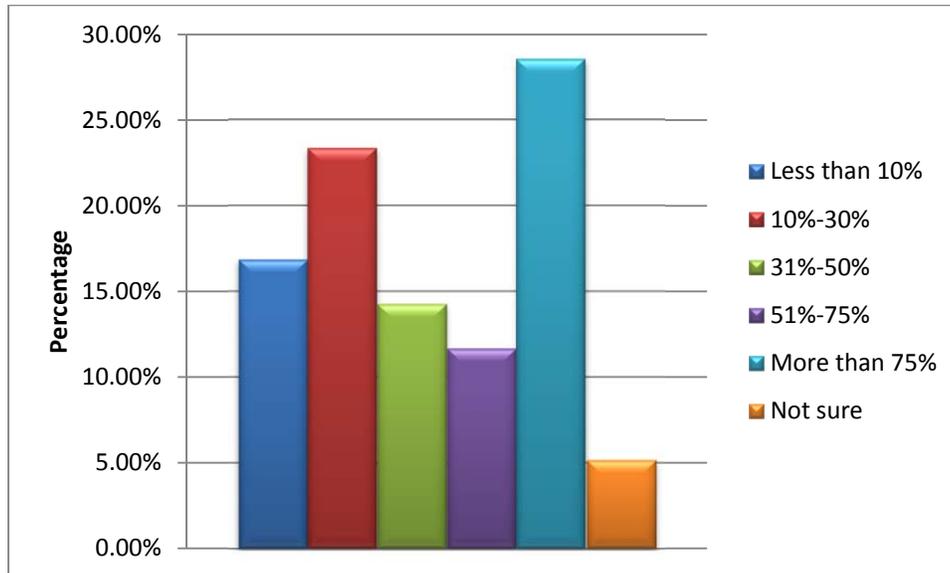
5. What are the primary products that you sell at the farmers markets? Please indicate your main products as proportion of your annual farmers market sales in the table below.

Answer	Average %
Fruit	13
Vegetables & Melons	34
Tree Nuts	0
Nursery Plants & Flowers	10
Dairy Products	0
Poultry & Eggs	3
Meat Products	3
Processed Products	10
Other	27
TOTAL	100%



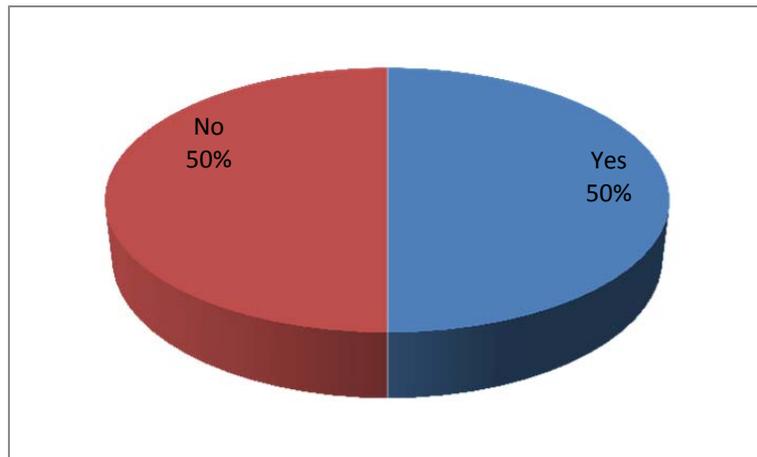
6. What proportions of your annual farm sales come from the Farmers Markets?

ANSWER	RESPONSE	%
Less than 10%	13	16.88%
10%-30%	18	23.38%
31%-50%	11	14.29%
51%-75%	9	11.69%
More than 75%	22	28.57%
Not sure	4	5.19%
TOTAL	77	100%



7. Excluding the materials available from the SC Locally Grown campaign, do you provide your own labeling to identify your products as SC Locally Grown?

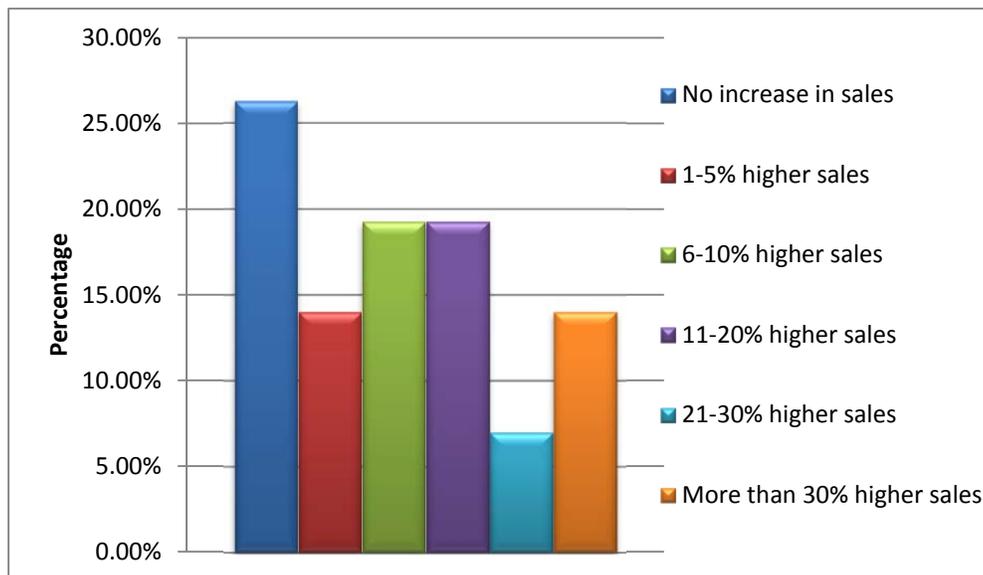
ANSWER	RESPONSE	%
Yes	38	50%
No	38	50%
TOTAL	76	100%



SECTION 3

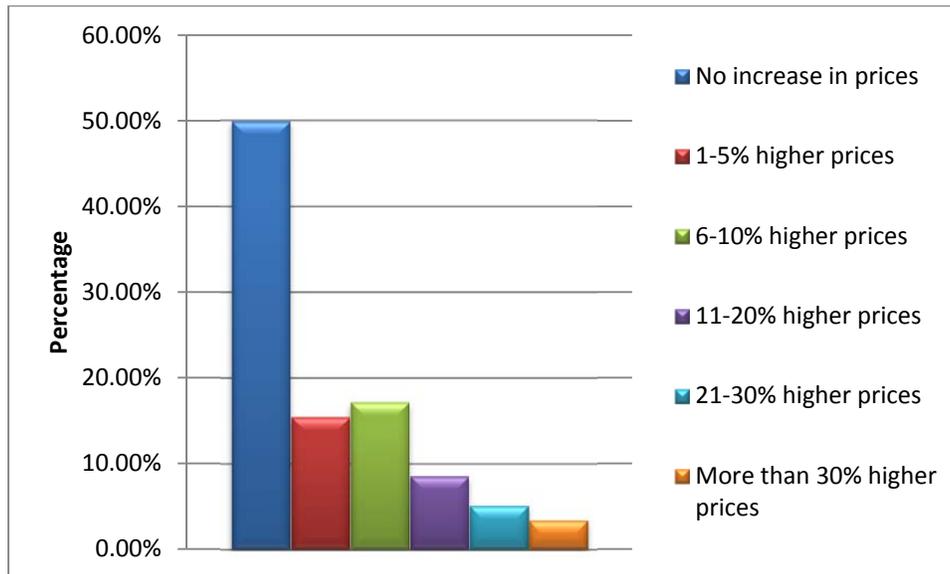
1. Do you believe that SC Locally Grown campaign has helped you increase your average annual sales of the products marketed as SC Locally Grown at the Farmers Markets?

Answer	Quantity	%
No increase in sales	15	26.32%
1-5% higher sales	8	14.04%
6-10% higher sales	11	19.30%
11-20% higher sales	11	19.30%
21-30% higher sales	4	7.02%
More than 30% higher sales	8	14.04%
TOTAL	57	100%



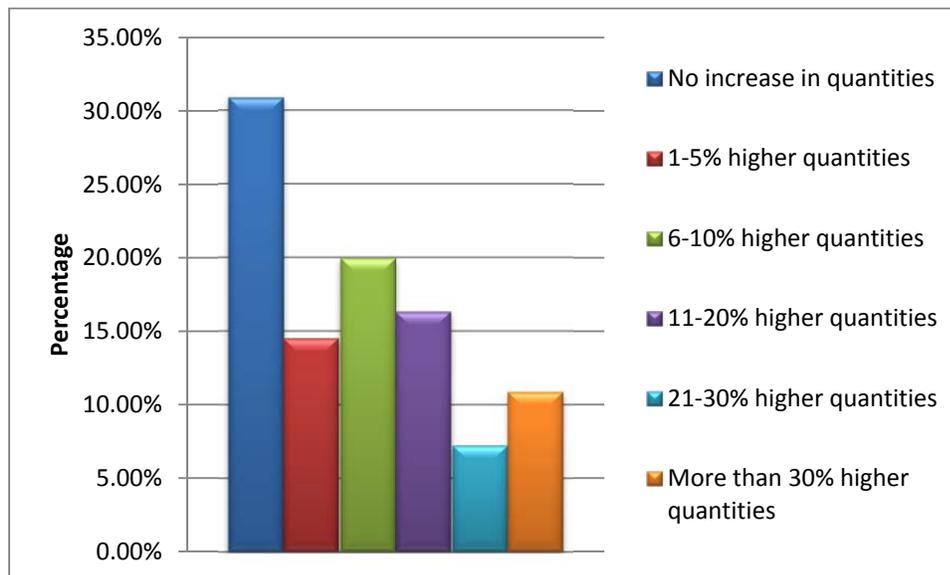
2. Do you believe that SC Locally Grown campaign has enabled you to receive higher-prices for your locally grown products at the Farmers Markets?

Answer	Quantity	%
No increase in prices	29	50.00%
1-5% higher prices	9	15.52%
6-10% higher prices	10	17.24%
11-20% higher prices	5	8.62%
21-30% higher prices	3	5.17%
More than 30% higher prices	2	3.45%
TOTAL	58	100%



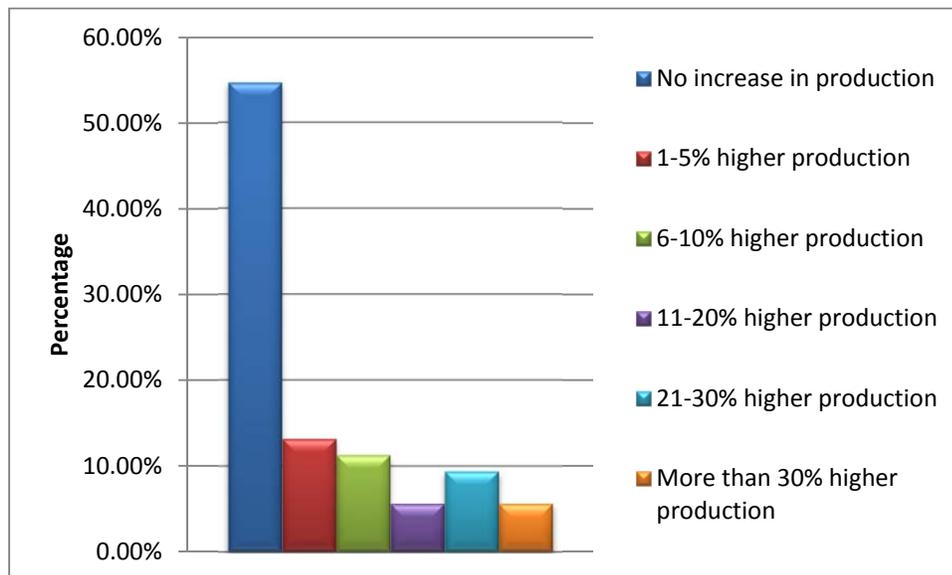
3. Do you believe that SC Locally Grown campaign has enabled you to sell larger quantities of your Locally Grown products at the Farmers Markets?

Answer	Quantity	%
No increase in quantities	17	30.91%
1-5% higher quantities	8	14.55%
6-10% higher quantities	11	20.00%
11-20% higher quantities	9	16.36%
21-30% higher quantities	4	7.27%
More than 30% higher quantities	6	10.91%
TOTAL	55	100%



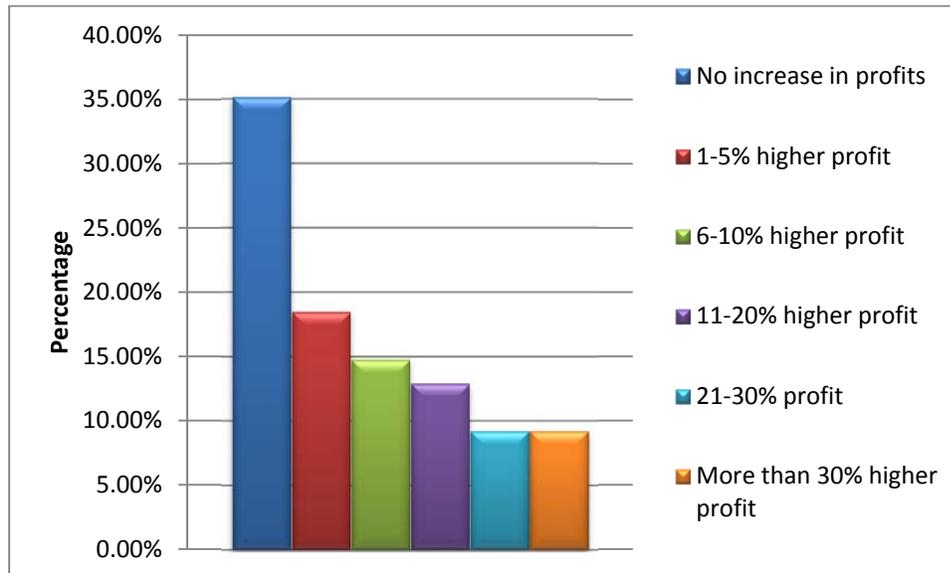
4. Did the SC Locally Grown campaign affect the amount of production by your business relative to what the production would have been without the campaign?

Answer	Quantity	%
No increase in production	29	54.72%
1-5% higher production	7	13.21%
6-10% higher production	6	11.32%
11-20% higher production	3	5.66%
21-30% higher production	5	9.43%
More than 30% higher production	3	5.66%
TOTAL	53	100%



5. Did the SC Locally Grown campaign affect your profits (farm income) from all locally grown products sold at the Farmers Markets relative to what the production would have been without the campaign?

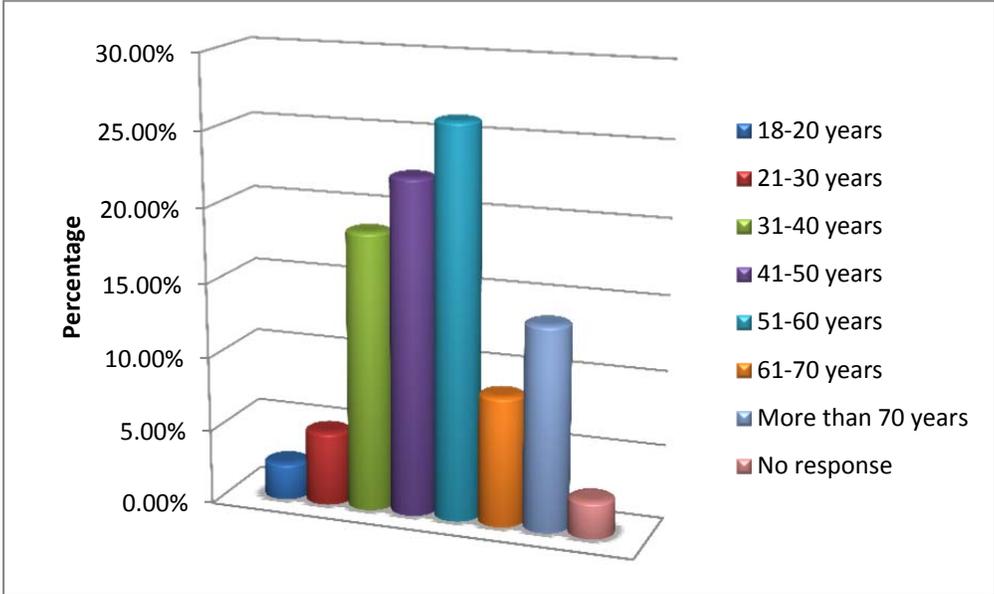
Answer	Quantity	%
No increase in profits	19	35.19%
1-5% higher profit	10	18.52%
6-10% higher profit	8	14.81%
11-20% higher profit	7	12.96%
21-30% profit	5	9.26%
More than 30% higher profit	5	9.26%
TOTAL	54	100%



SECTION 5

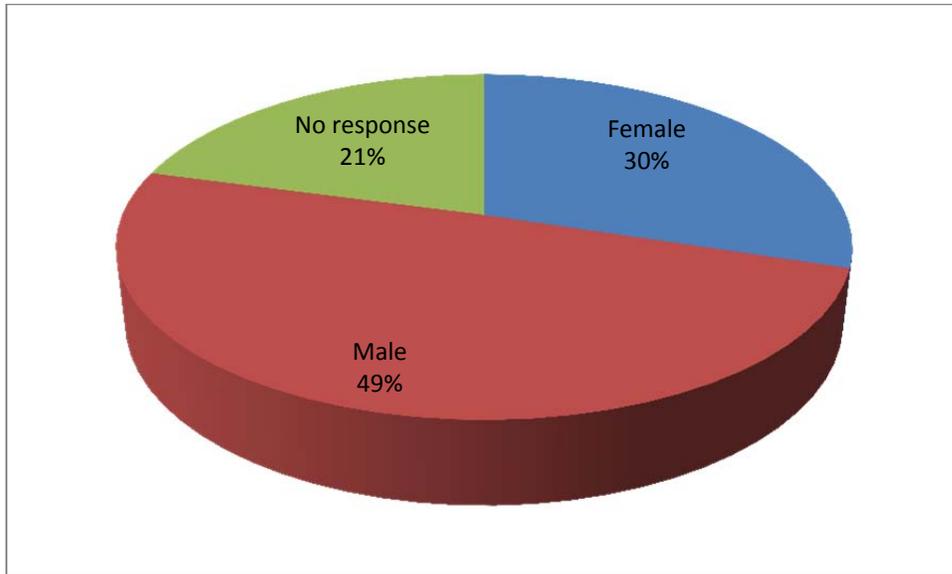
1. Age

Answer	Response	%
18-20 years	2	2.50%
21-30 years	4	5.00%
31-40 years	15	18.75%
41-50 years	18	22.50%
51-60 years	21	26.25%
61-70 years	7	8.75%
More than 70 years	11	13.75%
No response	2	2.50%
TOTAL	80	100%



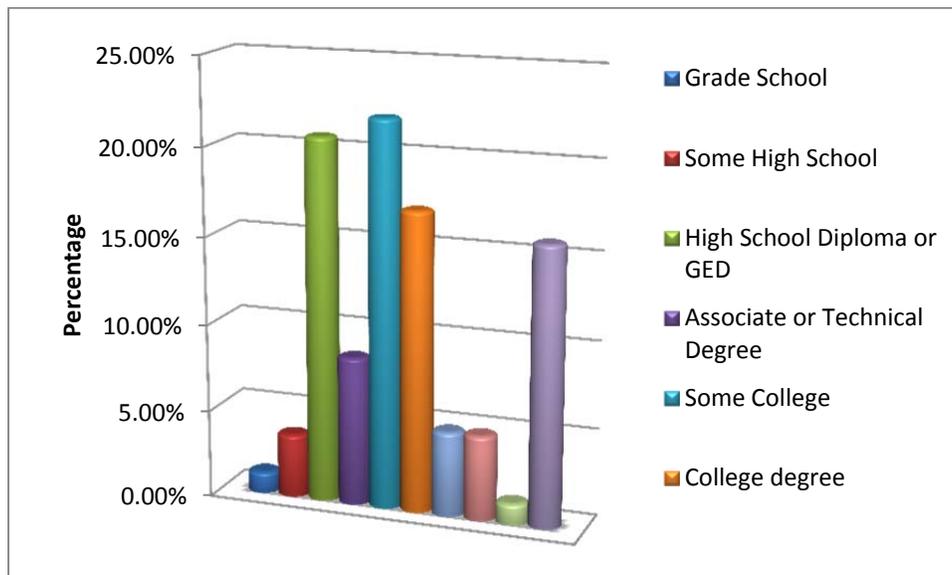
2. Gender

Answer	Response	%
Female	23	29.87%
Male	38	49.35%
No response	16	20.78%
TOTAL	77	100%



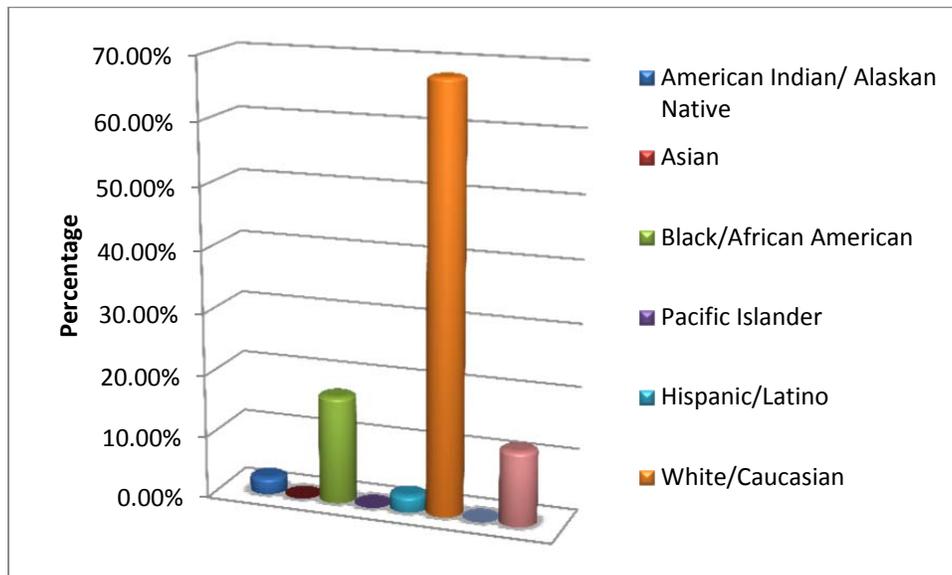
3. Highest level of Education completed

Answer	Response	%
Grade School	1	1.22%
Some High School	3	3.66%
High School Diploma or GED	17	20.73%
Associate or Technical Degree	7	8.54%
Some College	18	21.95%
College degree	14	17.07%
Some Graduate School	4	4.88%
Master's Degree	4	4.88%
Doctoral Degree	1	1.22%
No response	13	15.85%
TOTAL	82	100%



4. Race

Answer	Response	%
American Indian/ Alaskan Native	2	2.67%
Asian	0	0%
Black/African American	13	17.33%
Pacific Islander	0	0%
Hispanic/Latino	2	2.67%
White/Caucasian	51	68.00%
Other	0	0%
No response	9	12.00%
TOTAL	75	100%



RESULTS OF THE SURVEY

The survey was conducted among people whose ages were above 18, but the highest percentages were 51-60 years (26.3%) and 41-50 years (22.5%). In terms of gender, 49.4% were male and 30% were female. Twenty-two percent (the highest percentage) of the people interviewed had some college education and the predominant race was White/Caucasian (68%).

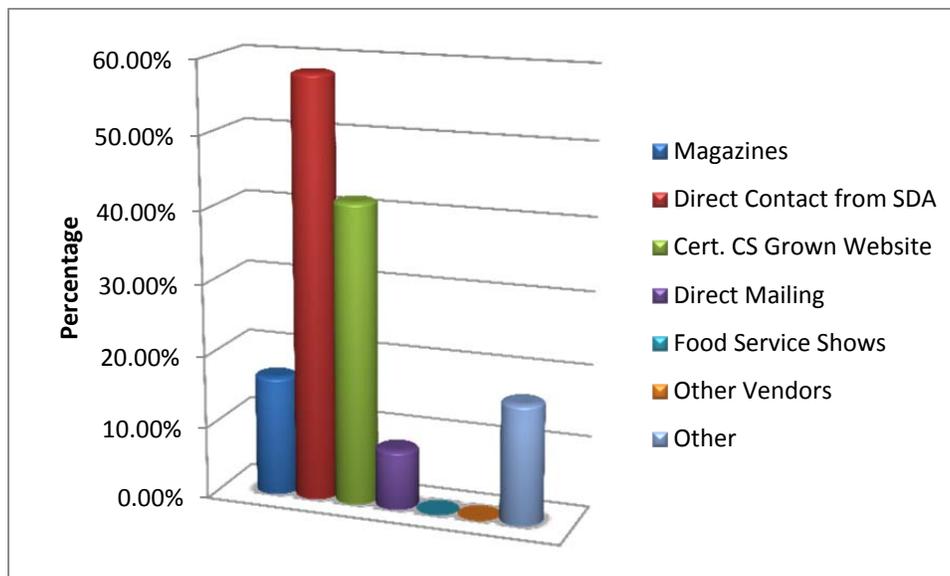
- Eighty-two percent of the people surveyed have had their farms in operation over the last three years. The majority (74%) owns farms under 10 acres size and 52% of the respondents indicated a size of business in terms of total annual sales of \$1000 -\$9999 (before deducting expenses).
- The primary products sold at the farmers markets (average) are Vegetables and melons in a 34%, followed by fruits (13%) and nursery plants and flowers (10%). Twenty-three percent of the people indicated that 10%-30% of their annual farm sales come from the Farmers Markets.
- Most of the people learned about the campaign through Direct Contract from the State Department of Agriculture (33.9%) and from other vendors (24.6%). According to results, the main reason to join the campaign was to increase the sales (53.2%) and was to have strong SC pride (25.5%).
- Forty-nine percent of the respondents do not bear with any costs related to the campaign.
- Of all, 77.8% agreed that they have marketed more than 30% of their products as SC Locally Grown over the last three years, but there are other marketing channels such as restaurants (19.5%) and others that are being used by the producers (18.2%). However, these other options were not specified by the respondents.
- Of all the respondents, 48% indicated that they are very satisfied and other 39% agreed to be satisfied with the campaign. Only 1 out of 44 respondents did not satisfied with the campaign.
- According to results, 19.3% of the people agreed that SC Locally Grown helped to increase their average annual sales in 6-10%, and a 19.3% agreed that their average annual sales went up in 11-20%. In the same way, 17.24% of the members noted to receive 6-10% of higher prices for their locally grown products. Twenty percent of members answered that they sold 6-10% higher quantities of the Locally Grown products, and 13.2% of the respondents stated that the campaign affected the amount of production. More than 65% of the members agreed that the campaign increased their profits from all locally grown products sold at the Farmers Markets.

FARMER'S MARKET
MANAGER' SURVEY RESULTS

SECTION 1

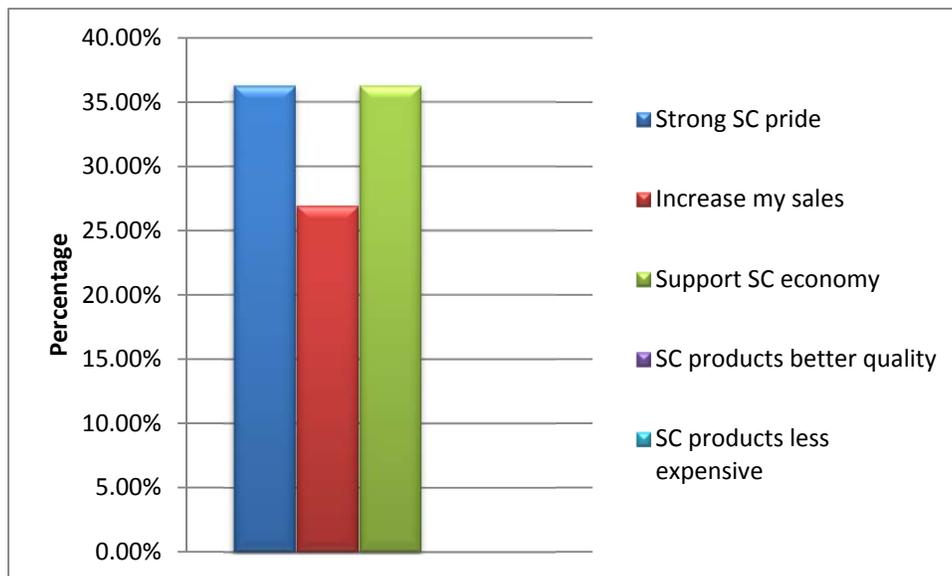
41. How did you learn about the SC Locally Grown campaign? (Please check all that apply)

ANSWER	RESPONSE	%
Magazines	2	16.70%
Direct Contact from SDA	7	58.30%
Cert. SC Grown Website	5	41.70%
Direct Mailing	1	8.30%
Food Service Shows	0	0%
Other Vendors	0	0%
Other	2	16.70%



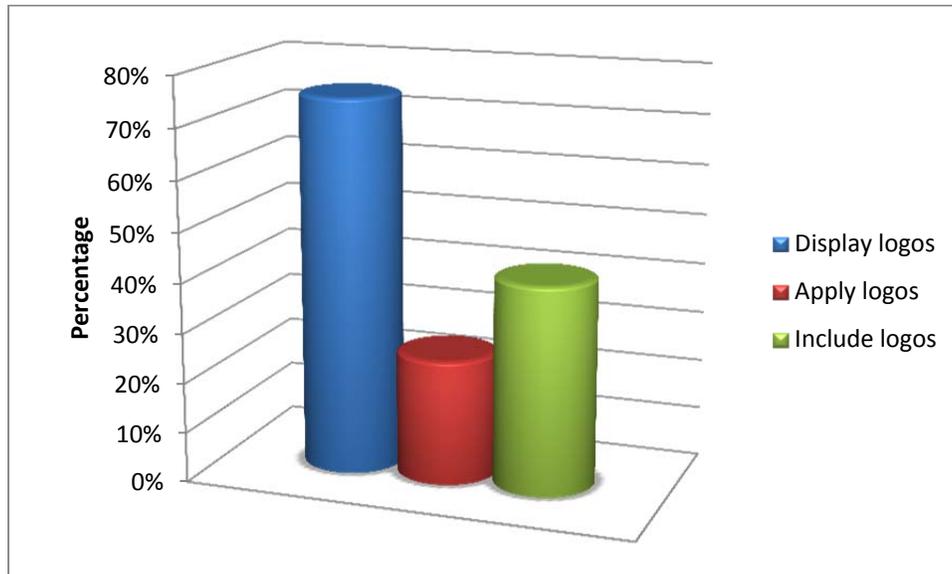
42. Which of the following reasons was the most important motivation for you to join the SC Locally Grown campaign?

ANSWER	RESPONSE	%
Strong SC pride	4	36.33%
Increase my sales	3	27%
Support SC economy	4	36.33%
SC products better quality	0	0.00%
SC products less expensive	0	0.00%
TOTAL	11	100%



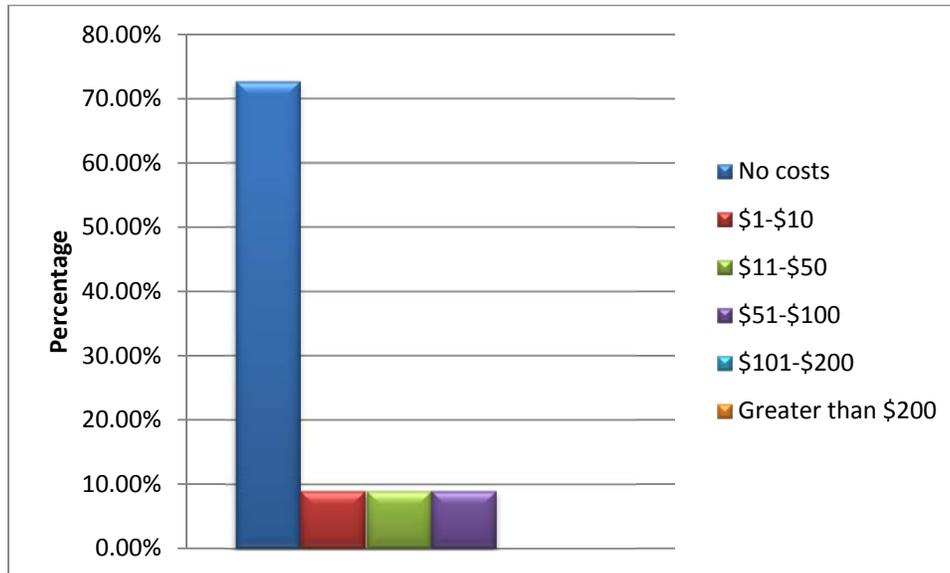
43. Please describe how you participate in the campaign. (Please check all that apply.)

ANSWER	RESPONSE	%
Display logos	9	75%
Apply logos	3	25%
Include logos	5	41.70%



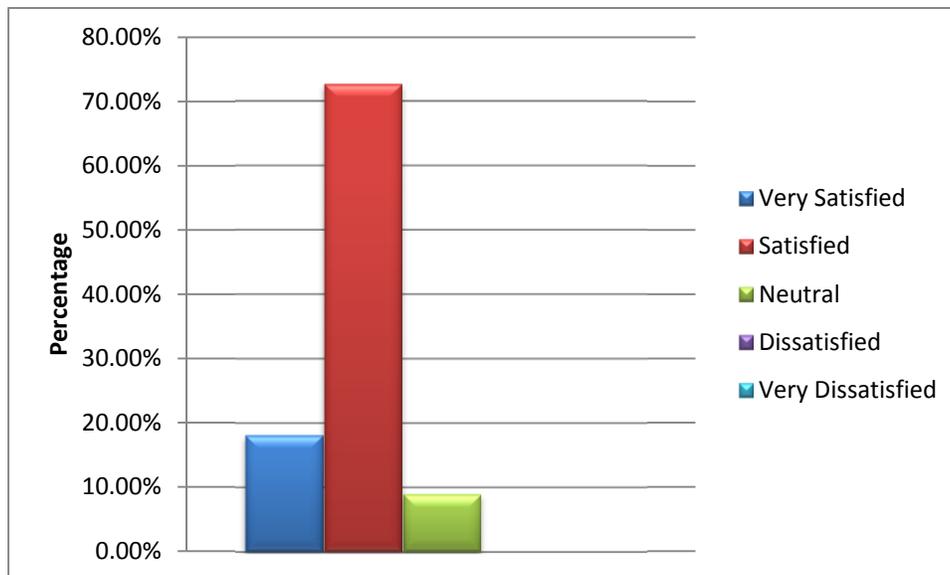
44. Please describe the average annual costs of your participation in the campaign.

ANSWER	RESPONSE	%
No costs	8	72.76%
\$1-\$10	1	9.05%
\$11-\$50	1	9.05%
\$51-\$100	1	9.05%
\$101-\$200	0	0.00%
Greater than \$200	0	0.00%
TOTAL	11	100%



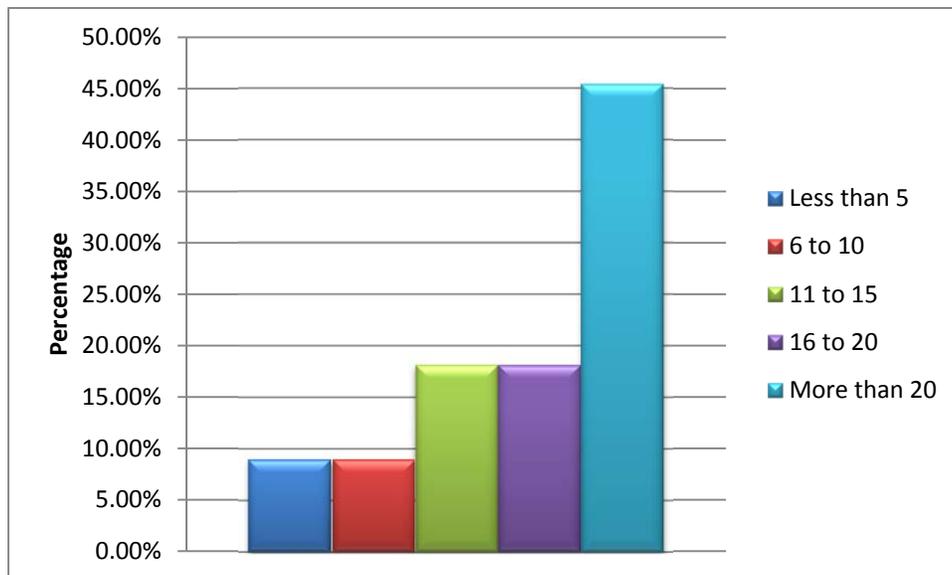
45. How would you rate your overall satisfaction with the campaign?

ANSWER	RESPONSE	%
Very Satisfied	2	18.22%
Satisfied	8	72.76%
Neutral	1	9.05%
Dissatisfied	0	0.00%
Very Dissatisfied	0	0.00%
TOTAL	11	100%



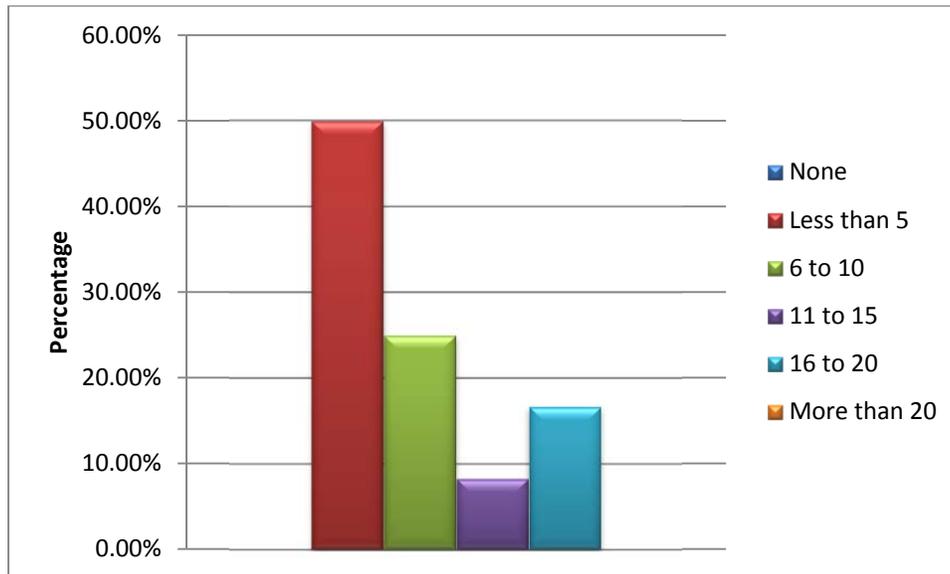
46. Approximately, how many vendors distribute in your Farmers Markets?

ANSWER	RESPONSE	%
Less than 5	1	9.05%
6 to 10	1	9.05%
11 to 15	2	18.22%
16 to 20	2	18.22%
More than 20	5	45.49%
TOTAL	11	100%



47. How many vendors of your Farmers Market participate in the Certified South Carolina Locally Grown campaign?

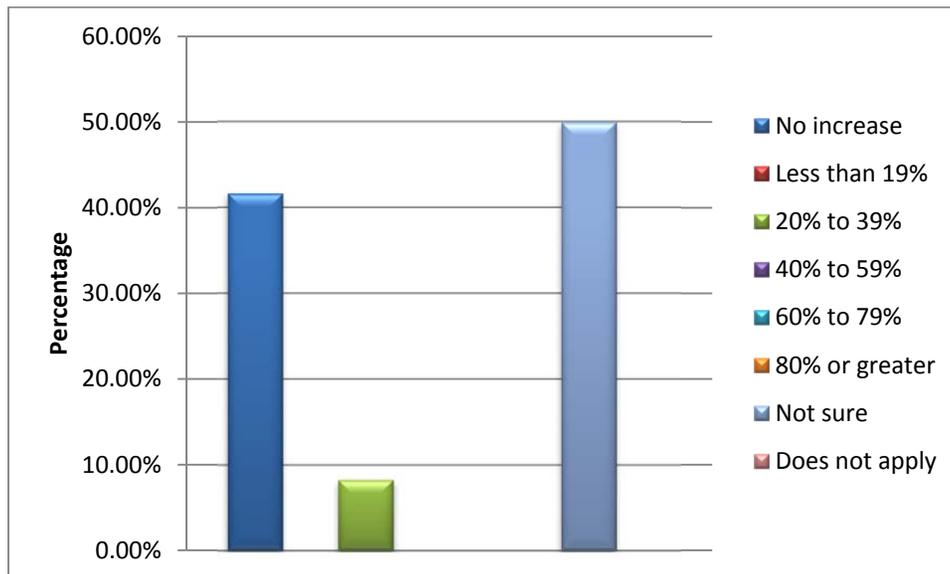
ANSWER	RESPONSE	%
None	0	0.00%
Less than 5	6	50.00%
6 to 10	3	25.00%
11 to 15	1	8.30%
16 to 20	2	16.70%
More than 20	0	0.00%
TOTAL	12	100%



SECTION 2

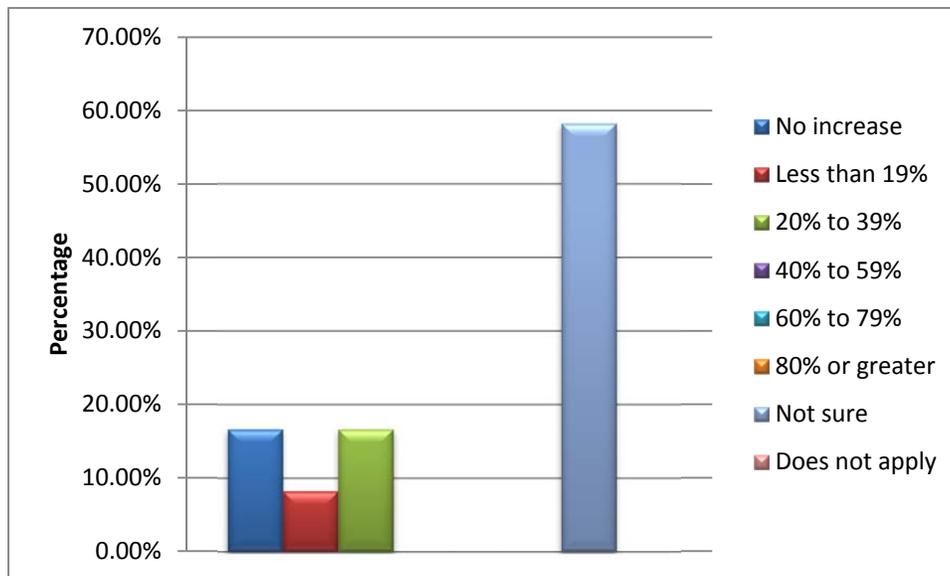
6. What percentage increase in the number of vendors at your Farmers Market have you experienced due to the SC locally grown campaign?

Answer	Quantity	%
No increase	5	41.70%
Less than 19%	0	0.00%
20% to 39%	1	8.30%
40% to 59%	0	0.00%
60% to 79%	0	0.00%
80% or greater	0	0.00%
Not sure	6	50.00%
Does not apply	0	0.00%
TOTAL	12	100%



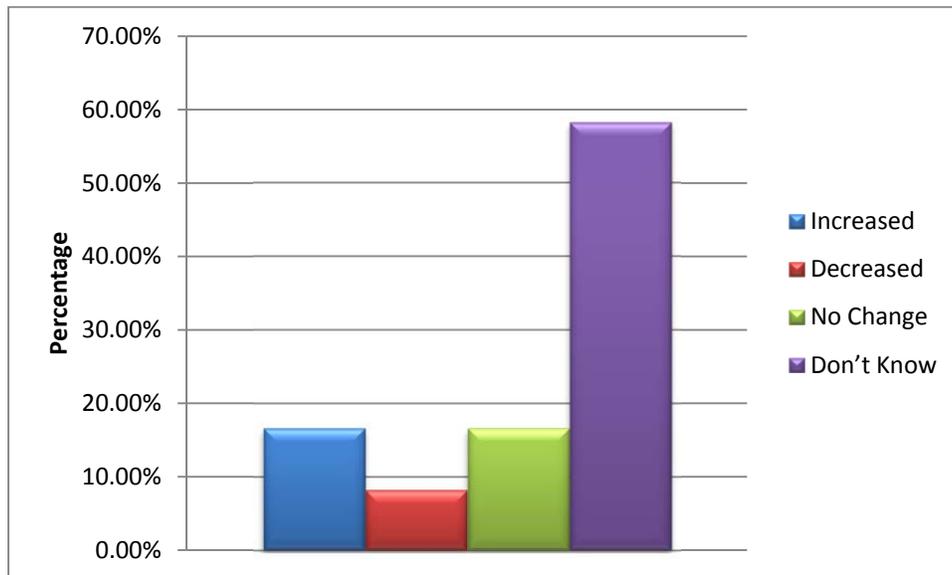
7. What percentage increase in the total sale at your Farmers Market have you experienced due to the SC locally grown campaign?

Answer	Quantity	%
No increase	2	16.70%
Less than 19%	1	8.30%
20% to 39%	2	16.70%
40% to 59%	0	0.00%
60% to 79%	0	0.00%
80% or greater	0	0.00%
Not sure	7	58.30%
Does not apply	0	0.00%
TOTAL	12	100%



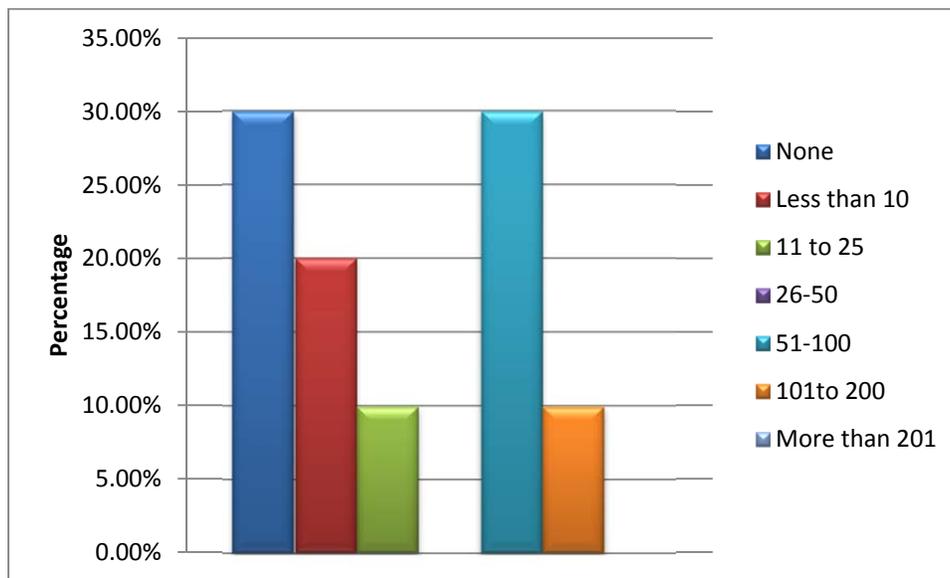
8. How do you think the variability of the total sales was affected by the SC locally grown campaign?

Answer	Quantity	%
Increased	2	16.70%
Decreased	1	8.30%
No Change	2	16.70%
Don't Know	7	58.30%
TOTAL	12	100%



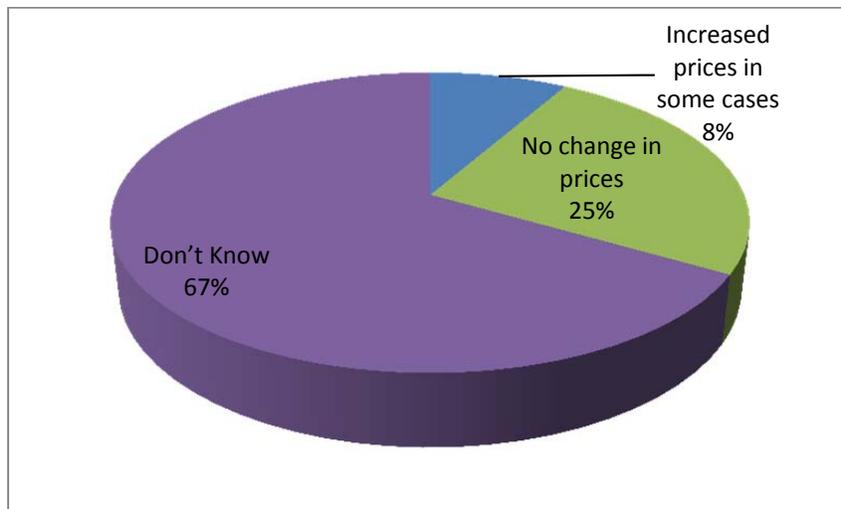
9. How many new customers do you think your Farmers Market have gained due to the SC locally grown campaign?

Answer	Quantity	%
None	3	30.00%
Less than 10	2	20.04%
11 to 25	1	9.96%
26-50	0	0.00%
51-100	3	30.00%
101to 200	1	9.96%
More than 201	0	0.00%
TOTAL	10	100%



10. Do you think the SC locally grown campaign allowed your vendors to change average prices per unit that they were able to receive for their products?

Answer	Quantity	%
Increased prices in some cases	1	8.30%
Decreased prices in some cases	0	0.00%
No change in prices	3	25.00%
Don't Know	8	66.60%
TOTAL	12	100%

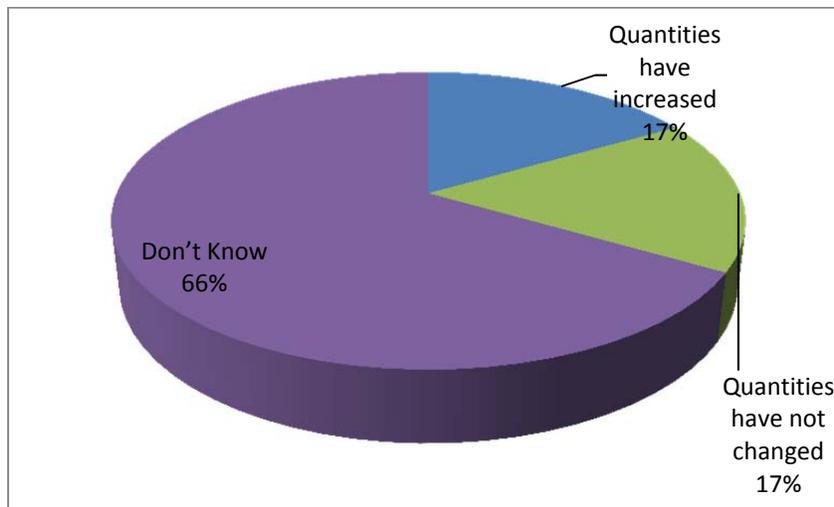


Approximately, what is the percentage increase/decrease in average prices per unit?

Answer	Quantity	%
Less than 5%	1	100%
6% to 10%	0	0.00%
11% to 20%	0	0.00%
More than 20%	0	0.00%
TOTAL	1	100%

11. Do you think the SC locally grown campaign allowed your vendors to change quantities of products that they were able to sell annually?

Answer	Quantity	%
Quantities have increased	2	16.70%
Quantities have decreased	0	0.00%
Quantities have not changed	2	16.70%
Don't Know	8	66.70%
TOTAL	12	100%



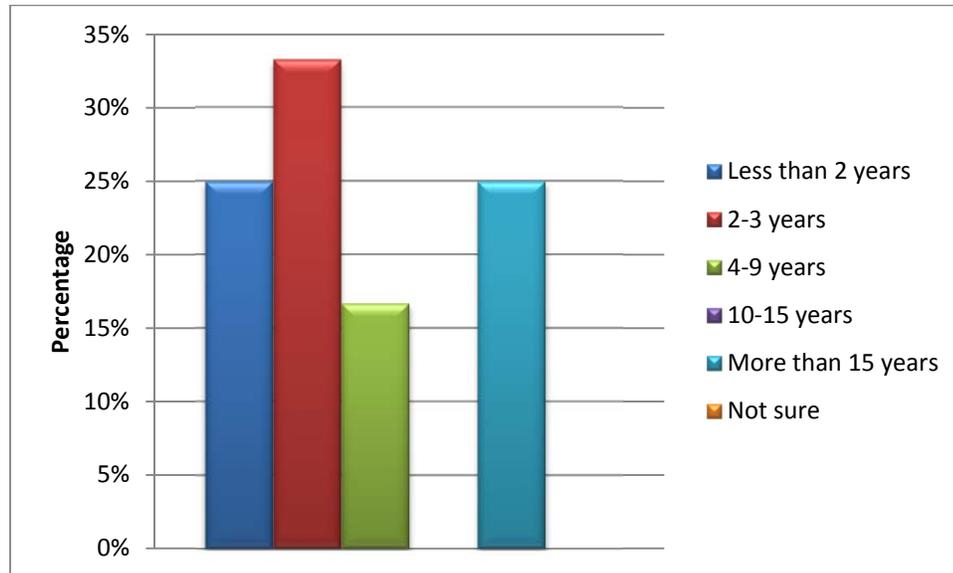
Approximately, what is the percentage increase/decrease in average prices per unit?

Answer	Quantity	%
Less than 5%	1	50.00%
6% to 10%	0	0.00%
11% to 20%	1	50.00%
More than 20%	0	0.00%
TOTAL	2	100%

SECTION 4

5. How long have your Farmers Market been in operation?

Answer	Response	%
Less than 2 years	3	25%
2-3 years	4	33.30%
4-9 years	2	16.70%
10-15 years	0	0.00%
More than 15 years	3	25%
Not sure	0	0.00%
TOTAL	12	100%

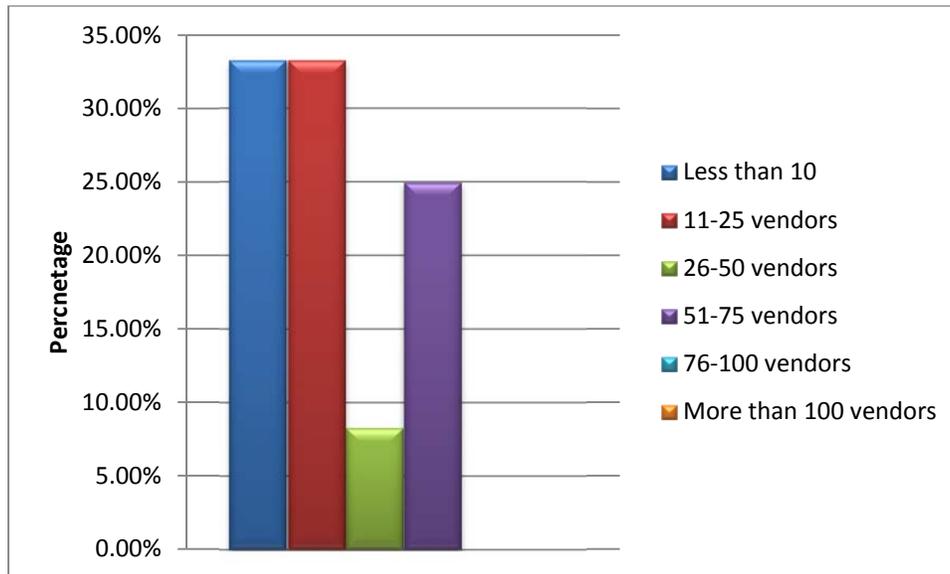


6. Please provide the zip code where your Farmers Market is located.

Answer	Response
29902	1
29211	1
29621	1
29526	1
29483	1
29360	1
29208	1
29550	1
29201	1
29341	1
29169	1
29229	1
TOTAL	12

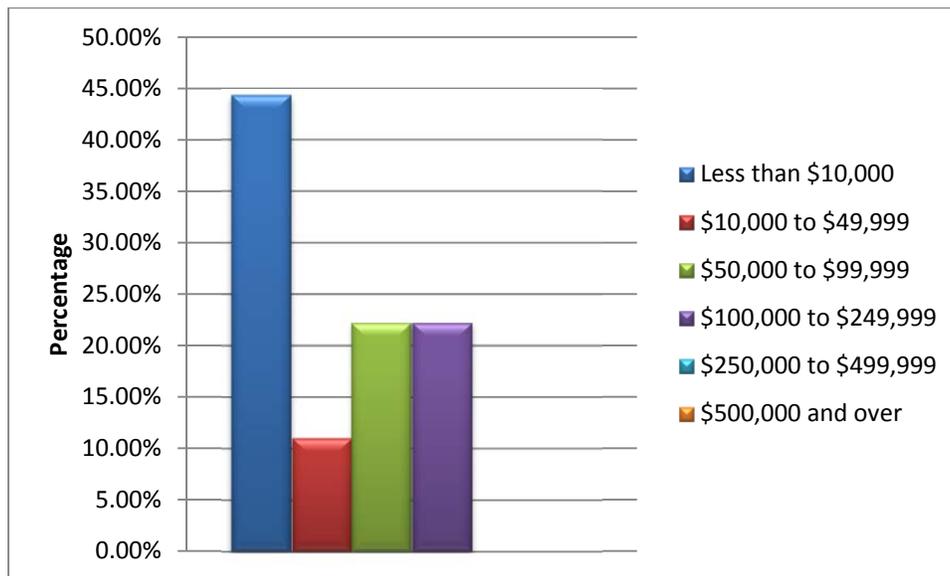
7. How would you best describe the size of your Farmers Market in terms of the average number of vendors over the most recent full calendar year?

Answer	Response	%
Less than 10	4	33.30%
11-25 vendors	4	33.30%
26-50 vendors	1	8.30%
51-75 vendors	3	25%
76-100 vendors	0	0.00%
More than 100 vendors	0	0.00%
TOTAL	12	100%



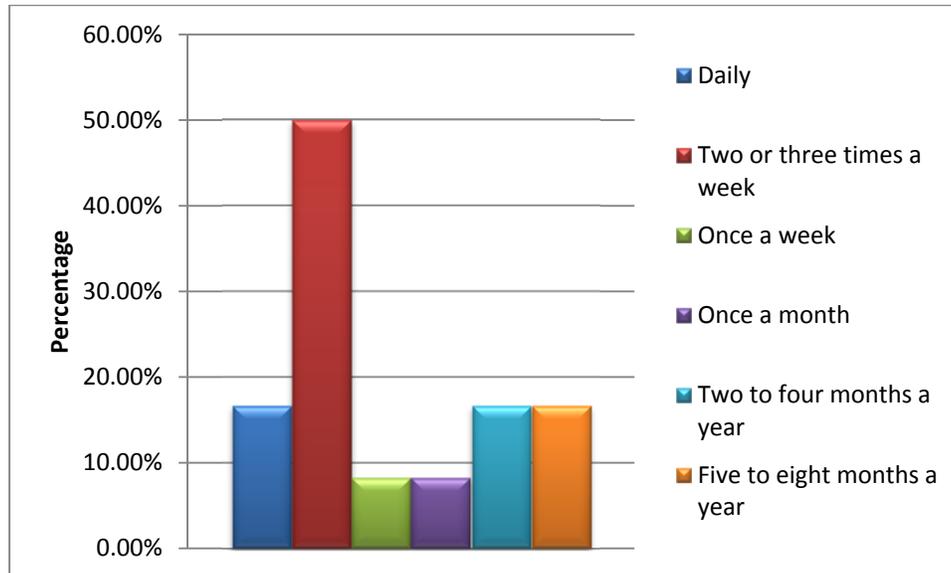
8. How would you best describe the size of your Farmers Market in terms of total sales over the most recent full calendar year?

Answer	Response	%
Less than \$10,000	4	44.40%
\$10,000 to \$49,999	1	11.07%
\$50,000 to \$99,999	2	22.27%
\$100,000 to \$249,999	2	22.27%
\$250,000 to \$499,999	0	0.00%
\$500,000 and over	0	0.00%
TOTAL	9	100%



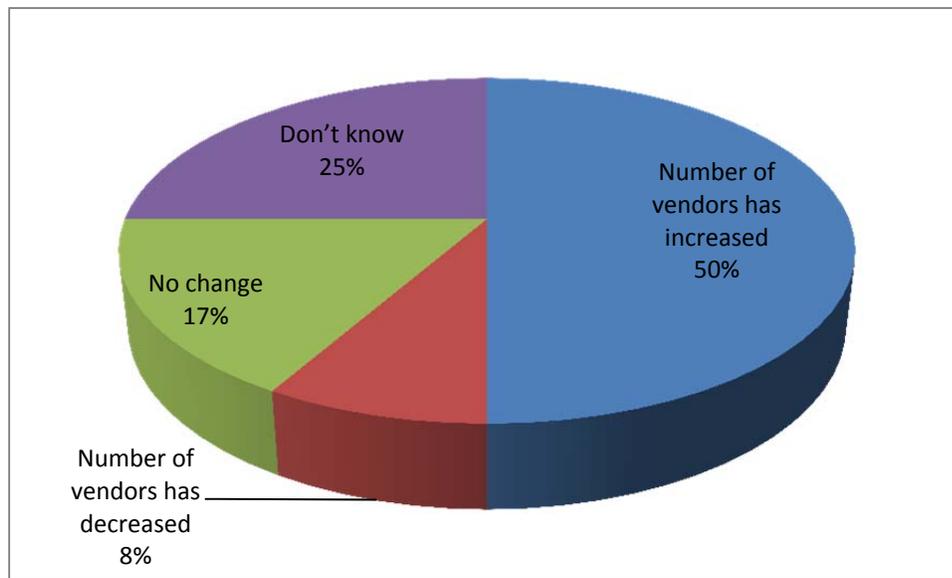
9. How would you best describe the frequency of operation of your Farmers Market?

Answer	Response	%
Daily	2	16.70%
Two or three times a week	6	50.00%
Once a week	1	8.30%
Once a month	1	8.30%
Two to four months a year	2	16.70%
Five to eight months a year	2	16.70%
TOTAL	12	100%



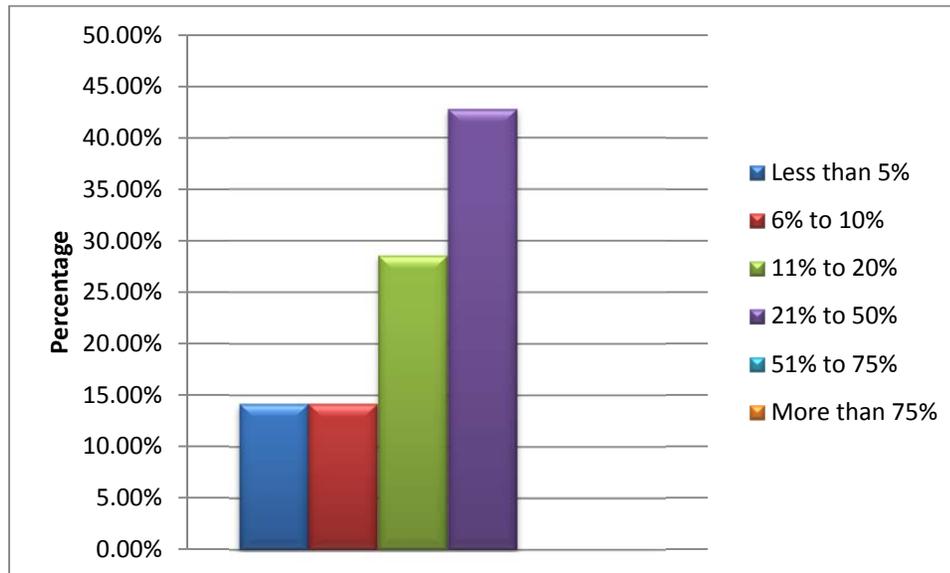
10. Do you think there has been a change in the number of vendors that participate at your Farmers Market over the last three year?

Answer	Response	%
Number of vendors has increased	6	50.00%
Number of vendors has decreased	1	8.30%
No change (Skip to question 7)	2	16.70%
Don't know (Skip to question 7)	3	25.00%
TOTAL	12	100%



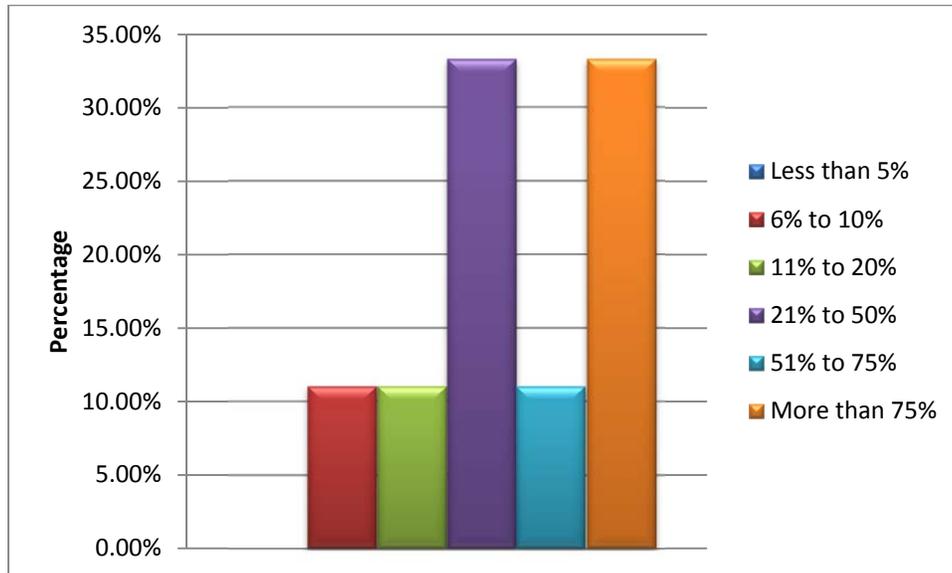
Based on your last response, approximately, what is the percentage change in the number of vendors that participate at your Farmers Market over the last three year?

Answer	Response	%
Less than 5%	1	14.23%
6% to 10%	1	14.23%
11% to 20%	2	28.63%
21% to 50%	3	42.86%
51% to 75%	0	0.00%
More than 75%	0	0.00%
TOTAL	7	100%



11. What percentage of SC products must a vendor sell to classify themselves as SC locally grown?

Answer	Response	%
Less than 5%	0	0.00%
6% to 10%	1	11.07%
11% to 20%	1	11.07%
21% to 50%	3	33.33%
51% to 75%	1	11.07%
More than 75%	3	33.33%
TOTAL	9	100%



RESULTS OF THE SURVEY

The survey was conducted among twelve Farmers Market managers.

- Seventy-five percent of the surveyed farmers markets have operated between 1 and 9 years, while 25% have operated more than 15 years. Most (75%) of the farmers markets open at least once a week.
- Sixty-seven percentage of the response managers stated that there are less than 25 vendors in their farmers market, and 33% said there are 26-75 vendors in the farmers market. Forty-four percent of the surveyed farmers markets' total sales over the most recent full calendar year were less than \$10,000. But 22.3% of the farmers markets' sales were between \$100,000 and \$249,999.
- Most of the surveyed farmers' market manager learned about the campaign through Direct Contract from the State Department of Agriculture (58.3%) and from Certificated SC Grown Website (41.7%). According to results, the main reasons to join the campaign were to have strong SC pride (36.3%) and to support SC economy (36.33%).
- Seventy-three percent of the respondents do not bear with any costs related to the campaign.
- Of all the respondents, 18.2% indicated that they are very satisfied and other 72.8% agreed to be satisfied with the campaign. There was no one dissatisfied or very dissatisfied with the campaign.
- According to results, the number of vendors at the farmers market had no increased due to the SC locally grown campaign, but respondents answered that there was increase in the total sale. 30% of the farmers market managers agreed that SC Locally Grown helped them to gain 51-100 new customers, and a 30% agreed that they gained 1-25 new customers. Only one respondents stated that SC locally grown campaign allowed their vendors to increase average prices per unit, and 2 answered that the campaign vendors to change quantities of products.

APPENDIX B

PUBLICATIONS

To Fund or Not to Fund: Assessment of the Potential Impact of a Regional Promotion Campaign

Carlos E. Carpio and Olga Isengildina-Massa

This paper develops a framework for assessing the potential economic impact of a regional promotion campaign combining contingent valuation methods with a partial displacement equilibrium model. The proposed approach is applied to the evaluation of the potential economic impact of the locally grown campaign in South Carolina. Results reveal that the first season of the promotion campaign increased consumer willingness to pay for produce by 3.4%. The change in consumer preferences and the corresponding shift in demand increased producer surplus by \$3.09 million. This economic benefit, combined with the 2007 promotion campaign investment, resulted in a benefit-cost ratio of 6.18.

Key Words: contingent valuation, economic impact, equilibrium displacement model, regional promotion campaign

Introduction

Regional promotion campaigns have played an important role in agricultural and food policy around the world (e.g., Van Ittersum, 2002; Kaiser et al., 2005). For example, in the European Union, such campaigns have been supported since 1992 by legislation of the European Commission [Regulation (EEC) N 2081/1992], which enabled producers to register, protect, and market geographically based products (Commission of the EU, 1992). In the United States, regional promotion programs have seen substantial growth since the mid-1990s. In fact, between 1995 and 2006, the number of states conducting such programs rose from 23 to 43 (Patterson, 2006). A large portion of this increase occurred as a result of the Community Food Security Act (part of the Nutrition Title of the Federal Agriculture Improvement and Reform Act of 1996, P.L. 104-127), which generated \$22 million in support for 166 local food system initiatives from 1996 to 2003 (Tauber and Fisher, 2002). Continued support for regional products has been expressed in the Food, Conservation, and Energy Act of 2008 (P.L. 110-246); the 2008 act directed the Secretary of Agriculture to encourage institutions, such as schools, to purchase locally grown and locally raised unprocessed agricultural products to the maximum extent practicable and appropriate. State governments provide specific appropriations for such programs and are another significant source of funding for regional promotion campaigns in the United States.

Carlos E. Carpio and Olga Isengildina-Massa are both assistant professors in the Department of Applied Economics and Statistics at Clemson University. Partial funding for this research was provided by Grant No. 12-25-G-0898 from the U.S. Department of Agriculture/Agricultural Marketing Service's Federal/State Marketing Improvement Program (FSMIP). The authors gratefully acknowledge David Willis, the *Journal* editor, and two anonymous reviewers for their helpful comments and suggestions.

Review coordinated by Gary W. Brester.

Little is known about the effectiveness of the multiple state-funded promotion campaigns in the United States. For example, a study on the 1999 *Arizona Grown* campaign provided little evidence for the program's effectiveness in increasing product sales (Patterson et al., 1999). In contrast, Govindasamy et al. (2003) assert that the 2000 *Jersey Fresh* program provided about \$32 to fruit and vegetable growers for every dollar invested in the campaign. This finding suggests the \$1.16 million campaign generated \$36.6 million in sales for New Jersey produce growers. The resulting impact of the *Jersey Fresh* program on total economic activity in New Jersey was estimated at \$63.2 million. Given the mixed success of previous campaigns, initiating a new one is potentially risky. When policy makers seek funding for regional promotion campaigns, they are often asked to provide information on potential returns on investment. Unfortunately, the agricultural economics literature offers little guidance.

Previous studies examining state promotion programs have concentrated either on theoretical questions, such as the necessary conditions for campaign effectiveness (e.g., Adelaja, Brumfield, and Lininger, 1990; Wirthgen, 2005), or on practical issues of evaluating historical program performance after sufficient time-series data have become available (e.g., Patterson et al., 1999; Govindasamy et al., 2003). However, these studies are of little benefit in cases where it is necessary to evaluate potential returns at the initial stages of campaign implementation in order to justify further funding. Yet, such guidance can prove critical to campaign survival. Accordingly, the primary objective of this study is to develop an approach for measuring the potential economic impact of regional promotion campaigns that can be used during initial implementation phases.

We extend the previous literature on regional promotion campaign evaluation by developing and applying a novel approach combining contingent valuation methods and the partial equilibrium displacement modeling (EDM) framework to provide an ex ante assessment of regional promotion campaign impact. An equilibrium displacement modeling approach is used to identify the way in which the campaign will affect prices and quantities of labeled and mass-marketed products in the campaign region. We demonstrate that potential campaign impacts can be measured using information on the pre-campaign quantities, prices, market shares, and demand and supply elasticities for labeled and mass-marketed products as well as an estimate of shift in demand for branded products resulting from the promotion campaign.¹ Thus, the only unknown at the initial stages of campaign implementation is the shift in consumer demand. This study proposes the use of contingent valuation techniques to measure shifts in consumer demand in response to promotion at the initial stages of campaign implementation. The approach developed here is applied to estimating the potential impact of the South Carolina (SC) locally grown campaign.

Conceptual Framework

Equilibrium Displacement Model

Our first objective is to determine how to measure changes in welfare as a result of changes in prices and quantities of branded and nonbranded products within a two-region competitive model. This model is based on the EDM methodology originally developed by Muth (1964) and widely used for agricultural price and policy analysis (e.g., Alston, Norton, and Pardey,

¹ Piggott (1992) argues that for small (10% or less) exogenous shocks, the first-order approximation effects provided by the EDM approach are likely to be close to the "true" effects with significantly lower research resources.

1995; Piggot, 2003; Wohlgenant, 1993). Most recently, the EDM approach has been applied by Anders, Thompson, and Herrmann (2008) to markets segmented by regional-origin labeling with quality control. The authors extend the EDM approach to reflect product differentiation (rather than perfect substitutability as in previous studies) based on their regional origin and quality. Their main argument for regional product differentiation is the success of the association of European regional promotion programs with a quality-control system that leads regionally branded products to be superior to nonbranded products.

Our innovation is in adapting the EDM approach to an ex ante evaluation of regional promotion campaigns. The model is adjusted to account for campaign effects only within a promoting region—consistent with the structure of most U.S. regional promotion campaigns, which encourage consumers within a promoting region to purchase locally produced products and do not target consumers in other regions.

We begin with a multi-equation equilibrium model for two regions: region A promotes locally grown products, and region B is the rest of the economy that has trade and ties with region A. This framework assumes the agricultural promotion campaign is concentrated in region A, and no advertising efforts associated with this campaign are in place in region B. Thus, the two-region competitive market model can be described as follows:

■ Region A (promoting region)

Demand:

$$(1) \quad D_A^l = D_A^l(P_l, P_m, c_l),$$

$$(2) \quad D_A^m = D_A^m(P_l, P_m, c_l);$$

Supply:

$$(3) \quad S_A^l = S_A^l(P_l, P_m),$$

$$(4) \quad S_A^m = S_A^m(P_l, P_m);$$

■ Region B (rest of the country)

Demand:

$$(5) \quad D_B^m = D_B^m(P_m),$$

Supply:

$$(6) \quad S_B^m = S_B^m(P_m);$$

■ Market-Clearing Conditions

$$(7) \quad D_A^l = S_A^l,$$

$$(8) \quad D_A^m + D_B^m = S_A^m + S_B^m,$$

where D , S , and P denote quantity demanded, quantity supplied, and price; subscripts A and B denote promoting region (A) and rest of the country (B); superscripts l and m represent

regionally labeled products and mass-marketed products, respectively; and c_l is a variable related to the advertising of regionally labeled products, which we assume to be exogenously determined. The model does not rule out the possibility that producers can sell their products without using the locally grown label. The demand functions in region A allow for substitute relationships between the labeled and mass-marketed products.

An EDM approach is applied to evaluate how the advertising campaign will affect prices and quantities of regionally labeled and mass-marketed products (the endogenous variables in the system). This approach requires differentiation of equations (1)–(8), conversion of partial derivatives into elasticities, and expression of changes in the endogenous variables as proportional changes. The EDM approach including an exogenous shock γ , due to changes in the advertising variable c_l , yields:²

$$(1') \quad d \ln(D_A^l) = \varepsilon_A^{ll} d \ln(P_l) + \varepsilon_A^{lm} d \ln(P_m) + \gamma,$$

$$(2') \quad d \ln(D_A^m) = \varepsilon_A^{ml} d \ln(P_l) + \varepsilon_A^{mm} d \ln(P_m) - \frac{w_{AA}^{Dl}}{w_{AA}^{Dm}} \gamma,$$

$$(3') \quad d \ln(S_A^l) = \beta_A^{ll} d \ln(P_l) + \beta_A^{lm} d \ln(P_m),$$

$$(4') \quad d \ln(S_A^m) = \beta_A^{ml} d \ln(P_l) + \beta_A^{mm} d \ln(P_m),$$

$$(5') \quad d \ln(D_B^m) = \varepsilon_B^{mm} d \ln(P_m),$$

$$(6') \quad d \ln(S_B^m) = \beta_B^{mm} d \ln(P_m),$$

$$(7') \quad d \ln(D_A^l) = d \ln(S_A^l),$$

$$(8') \quad w_{AT}^{Dm} d \ln(D_{AT}^m) + w_{BT}^{Dm} d \ln(D_B^m) = w_{AT}^{Sm} d \ln(S_A^m) + w_{BT}^{Sm} d \ln(S_B^m),$$

where $d \ln$ is the percentage change in the respective variable, ε_k^{ij} is the price elasticity of product i with respect to the price of product j in the k th region, and β_k^{ij} is the supply elasticity of product i with respect to the price of product j in the k th region. Demand and supply market shares are denoted by w_{kh}^{Di} and w_{kh}^{Si} , where i and j refer to either labeled (l) or mass-marketed (m) products; k equals either A (promoting region) or B (rest of the country); and h can equal either A (promoting region), B (rest of the country), or T (aggregate market composed of $A + B$). For example, w_{AT}^{Dm} represents region A's share of demand for mass-marketed products m with respect to the entire market T . Using this notation, we can specify the following adding-up conditions:

$$w_{AA}^{Dl} + w_{AA}^{Dm} = 1, \quad w_{AT}^{Dm} + w_{BT}^{Dm} = 1, \quad \text{and} \quad w_{AT}^{Sm} + w_{BT}^{Sm} = 1.$$

The linear equation system (1')–(8') can be written in matrix form as:

$$(9) \quad \mathbf{AY} = \mathbf{X},$$

² The adding-up condition restricts own- and cross-advertising effects. Hence, for the two-goods case, the cross-advertising effect of the advertising campaign on D_A^m is a function of the marketing shares and the own-price advertising effect (see Basman, 1956, p. 53; Kinnucan, 1996, p. 263).

where \mathbf{A} is a 7×7 matrix of parameters including elasticities and shares, \mathbf{X} is a 7×1 vector containing the exogenous demand shifters γ and $-(w_{AA}^{Dl} / w_{AA}^{Dm})\gamma$, and \mathbf{Y} is a 7×1 vector of changes in the endogenous variables [$d \ln(D_A^l)$, $d \ln(D_A^m)$, $d \ln(S_A^m)$, $d \ln(D_B^m)$, $d \ln(S_B^m)$, $d \ln(P_l)$, and $d \ln(P_m)$].

Relative changes in the endogenous variables (\mathbf{Y}) due to demand shifts (\mathbf{X}) can be calculated by solving (9) as $\mathbf{Y} = \mathbf{A}^{-1} \mathbf{X}$. Hence, changes in equilibrium prices and quantities of the labeled and mass-marketed products are functions of supply and demand elasticities, market shares, and the exogenous shock to demand due to advertising. Whereas data on aggregate supply and demand elasticities for most products are usually available from public sources, the shifts in demand due to the promotion campaign, as well as the disaggregated demand elasticities, must be estimated.

Willingness to Pay (WTP) and Advertisement Effects

Theoretically, WTP measures the maximum amount of money an individual is willing to give up to obtain a product of a given quality. Hence, WTP can be used to construct inverse compensated demand curves for a good (Lusk and Hudson, 2004). For example, if a specific application elicits WTP for one unit of a good, the individual demand curve consists of a single point (e.g., price = WTP; quantity = 1). If the elicitation is conducted before and after an advertisement campaign, the change in WTP (ΔWTP) can be interpreted as the vertical shift in the demand curve due to the campaign. The corresponding horizontal shift γ is measured as the product of the vertical shift, ΔWTP , and the own-price elasticity of demand for products in the promoting region A, ε_A^l (i.e., $\gamma = -\Delta WTP \varepsilon_A^l$).³

To the best of our knowledge, this method of advertisement evaluation has not been used previously for a regional promotion campaign evaluation. This approach is particularly attractive for evaluating public or private campaigns at their initial stages when sales data necessary to directly measure the shift in demand are not yet available. The information generated by this approach can be used to evaluate the potential impacts of an advertising or promotion campaign and to monitor the effects of the campaign on consumers.

Elasticity Decomposition

Evaluating the market impacts of the promotion campaign requires estimated demand and supply elasticities for both regionally labeled and mass-marketed products [equation (9)]; however, elasticity values available in the literature correspond to the aggregate elasticities, which combine these two types of products. Hence, we follow a procedure suggested by James and Alston (2002) to recover disaggregate elasticities for regionally labeled and mass-marketed products from the aggregate elasticities. The procedure is based on the assumption that regionally labeled products and mass-marketed products are weakly separable (Edgerton, 1997; James, 2000).

³ Interestingly, there are several studies in the environmental economics literature that have looked at the issue of temporal reliability of the contingent valuation method [see Whitehead and Aiken (2007) for a survey of these studies]. WTP estimates are said to be temporally reliable if they are stable over time. Hence, advertising or information campaigns can be seen as looking to affect the stability of WTP, which in turn can change benefit-cost estimates of policy alternatives.

Under this assumption, the elasticities of demand for these products can be expressed as follows: $\varepsilon_A^{ij} = w_{AA}^{Di}(\alpha_i \varepsilon + \vartheta) - \delta_{ij} \vartheta$, where ε is the elasticity of demand of the aggregate quantity with respect to the aggregate price, ϑ is the elasticity of substitution between regionally labeled products and mass-marketed products ($\vartheta > 0$), α_i is the elasticity of demand for group i with respect to expenditures ($\alpha_i > 0$), and δ_{ij} is the Kronecker delta ($\delta_{ij} = 1$ when $i = j$; $\delta_{ij} = 0$ when $i \neq j$) (James and Alston, 2002). In a similar manner, elasticities of supply for these products can be expressed as $\beta_A^{ij} = w_{AA}^{Di}(\rho_i \beta + \tau) - \delta_{ij} \tau$, where β is the elasticity of supply of the aggregate quantity with respect to the aggregate price, τ is the elasticity of transformation between regionally labeled products and mass-marketed products in the production process ($\tau < 0$), and ρ_i is the expansion elasticity ($\rho_i > 0$) (James and Alston, 2002).

Empirical Analysis

We now apply our conceptual framework to the evaluation of potential economic impacts of the South Carolina locally grown campaign, which was launched on May 22, 2007, and financed by a special appropriation of \$500,000 by the state legislature. We focus on estimating advertising shock γ using contingent valuation methods, which ask respondents hypothetical questions about their WTP for products with specific attributes. We examined the “South Carolina grown” characteristic as the key product attribute for produce and animal products.

The contingent valuation questions used in this study are presented in the appendix. The questions use a dichotomous choice format, where a respondent is asked to identify his or her preference to buy or not to buy a product at the stated price. Note that in contrast to other contingent valuation studies, the WTP questions are asked using premiums expressed in percentage terms (relative to the current price) rather than dollar values. Percentage premiums are used since we are trying to measure the average premium across the aggregate categories of produce and animal products. Individuals were initially asked if they would purchase an in-state- or out-of-state-grown product at the same bid price [i.e., price differential (PD_I) equals 0]. If respondents indicated a preference for in-state products, they were subsequently asked if they would be willing to pay a randomly selected premium bid [i.e., price differential (PD_H) greater than 0] to consume the in-state-grown product over the out-of-state product. If they did not indicate a preference for in-state products in the first question, a follow-up question with a price bid was not asked.

The three possible responses to the bid scenarios are: (1) a “no” to the first bid (i.e., no preference for in-state over out-of-state products at 0% premium), (2) a “yes” followed by a “no” (preference at 0% premium, but no preference at higher premium), and (3) “yes” to both bids (i.e., preference at 0% premium and preference at higher premium). The sequence of questions defines the following ranges for the true WTP values: $(-\infty, PD_I]$, $[PD_I, PD_H]$, $[PD_H, \infty)$. The following three discrete outcomes of the bidding process are observable:

$$(10) \quad D = \begin{cases} WTP \leq PD_I & \text{(response outcome 1),} \\ PD_I \leq WTP < PD_H & \text{(response outcome 2),} \\ PD_H \leq WTP & \text{(response outcome 3),} \end{cases}$$

where WTP is the individual’s willingness-to-pay function for the “South Carolina grown” attribute in products. Assume that the mean WTP function is:

$$(11) \quad WTP = \mathbf{X}\boldsymbol{\theta} + u,$$

where \mathbf{X} is a vector of explanatory variables, $\boldsymbol{\theta}$ is a conformable vector of coefficients, and u is a random variable accounting for unobservable characteristics. By using equation (11) and assuming that $u \sim F(0, \sigma^2)$, where F is a cumulative distribution function with mean 0 and variance σ^2 , the choice probabilities corresponding to expression (12) are:

$$(12.1) \quad P(WTP \leq PD_I) = P(u \leq PD_I - \mathbf{X}\boldsymbol{\theta}) = F(PD_I - \mathbf{X}\boldsymbol{\theta}),$$

$$(12.2) \quad \begin{aligned} P(PD_I \leq WTP < PD_H) &= P(PD_I - \mathbf{X}\boldsymbol{\theta} \leq u < PD_H - \mathbf{X}\boldsymbol{\theta}) \\ &= F(PD_H - \mathbf{X}\boldsymbol{\theta}) - F(PD_I - \mathbf{X}\boldsymbol{\theta}), \end{aligned}$$

$$(12.3) \quad P(PD_H \leq WTP) = P(u > PD_H - \mathbf{X}\boldsymbol{\theta}) = 1 - F(PD_H - \mathbf{X}\boldsymbol{\theta}),$$

and the log likelihood becomes:

$$(13) \quad \begin{aligned} L = \sum_{D_1} \ln[F(PD_I - \mathbf{X}\boldsymbol{\theta})] &+ \sum_{D_2} \ln[F(PD_H - \mathbf{X}\boldsymbol{\theta}) - F(PD_I - \mathbf{X}\boldsymbol{\theta})] \\ &+ \sum_{D_3} \ln[1 - F(PD_H - \mathbf{X}\boldsymbol{\theta})], \end{aligned}$$

where D_g indicates the group of individuals belonging to the g th bidding process outcome. Given a choice for the F cumulative distribution function, the parameters $\boldsymbol{\theta}$ and σ^2 can be estimated. The approach outlined in equations (12) and (13) is an adaptation of the censored regression approach for the estimation of “closed-ended” contingent valuation surveys proposed by Cameron and James (1987) and Cameron (1988) for the case when survey participants respond in dichotomous fashion (yes/no) to a single bid. In this study, their procedure is adapted to account for the double-bidding process.

Data

Data on quantities and prices of SC agricultural products at the farm level were obtained from several sources, including *South Carolina Agricultural Statistics* [USDA/National Agricultural Statistics Service (NASS), 2008] and IMPLAN (Minnesota IMPLAN Group, Inc., 2006). The data on aggregate price elasticities of demand were constructed using the elasticities of demand from Huang and Lin (2000).⁴ Aggregate supply elasticities for livestock were obtained from Shumway and Alexander (1988) and Chavas and Cox (1995); aggregate supply elasticities for fruits, nuts, and vegetables were extrapolated from Chavas and Cox.

The individual demand and supply elasticity values were calculated using equations (10) and (11), which replaced eight elasticity values with seven underlying parameters: ε , β , ϑ , τ , α_l , ρ_l , and w_{AA}^{DI} , since

$$w_{AA}^{DI} + w_{AA}^{DM} = 1, \quad w_{AA}^{DI} \alpha_l + w_{AA}^{DM} \alpha_m = 1, \quad \text{and} \quad w_{AA}^{DI} \rho_l + w_{AA}^{DM} \rho_m = 1.$$

⁴ Huang and Lin's (2000) demand elasticities for animal products include elasticities for the beef, pork, poultry, other meat, fish, dairy, and eggs subgroups, and demand elasticities for fruits and vegetables separately. The disaggregated demand elasticities were transformed to aggregate elasticities using the approach outlined in Carpio, Wohlgenant, and Safley (2008).

Table 1. Parameter Values Used for Model of South Carolina (SC) Grown and Mass-Marketed Agricultural Products

Parameter Values	Fruits and Vegetables		Animal Products	
	SC-Grown ($i = l$)	Mass-Marketed ($i = m$)	SC-Grown ($i = l$)	Mass-Marketed ($i = m$)
Aggregate own-price elasticity of demand (ϵ) ^a	-0.77		-0.74	
Aggregate own-price elasticity of supply (β) ^b	1.00		0.88	
Elasticity of substitution (ϑ)	2.00		3.00	
Elasticity of transformation (τ)	-1.80		-1.60	
Price ^c (\$/lb.)	0.24		0.43	
Aggregate quantity demanded ^{c,d} (mil. lbs.)	379,070		1,564,920	
Market Shares:				
w_{AA}^{Di}	0.18	0.82	0.47	0.53
w_{AT}^{Di}	—	3.00×10^{-3}	—	5.48×10^{-3}
w_{AT}^{Di}	—	4.71×10^{-4}	—	3.27×10^{-3}
Expenditure elasticity (α_i)	1.20	0.96	1.20	0.82
Expansion elasticity (ρ_i)	1.00	1.00	1.00	1.00
Elasticity of demand for:				
SC-grown (ϵ_A^{li})	-1.81	0.89	-2.03	1.12
Mass-marketed (ϵ_A^{mi})	0.22	-0.96	1.13	-1.73
Elasticity of supply for:				
SC-grown (β_A^{li})	1.47	-0.59	1.26	-0.38
Mass-marketed (β_A^{mi})	-0.53	1.40	-0.34	1.22

^a Huang and Lin (2000).

^b Chavas and Cox (1995) and Shumway and Alexander (1988).

^c The aggregate price was calculated employing a weighted average of prices using the quantity shares as weights.

^d Price and quantity data were obtained from the USDA/NASS, *South Carolina Agricultural Statistics*, E-497 (2008) and Minnesota IMPLAN Group, Inc. (2006).

Because previous studies and data sources only provide direct estimates of ϵ , β , and w_{AA}^{Di} , the values of the remaining parameters were carefully selected based on the previous literature and economic theory, as is common practice in studies of commodity markets and policies (e.g., James and Alston, 2002; Piggott, 1992). Elasticities of demand with respect to expenditures were assumed to be larger for the regionally labeled products ($\alpha_l = 1.2$); mass-marketed product elasticities were recovered from the adding-up condition. On the supply side, expansion elasticities of regionally labeled products were assumed to be equal to 1 for both locally grown and mass-marketed products ($\rho_l = \rho_m = 1$). The remaining parameter values (ϑ and τ) were chosen to ensure SC-grown and mass-marketed products were substitutes in demand and supply. All values used for the underlying parameters are reported in table 1. The disaggregated own-price and cross-price elasticities derived from these values are also shown in table 1 and are consistent with theory and expectations.

The data used to calculate the advertising shock γ were collected by Richard Quinn and Associates via two statewide telephone surveys of South Carolinians age 18 or over, one before the beginning of the campaign (March 2007) and the second six months thereafter (September 2007). A total of 500 SC consumers responded to each of the above surveys. The surveys were designed to measure the attitudes and perceptions of SC consumers about “SC-grown” agricultural products. The survey also collected information on the socioeconomic characteristics of the respondents, as well as consumers’ perceptions about the quality of SC products and motivations to buy state-grown products (Carpio and Isengildina-Massa, 2009).

Results and Discussion

Evaluation of the Shift in Consumer Demand Due to the Promotion Campaign

The campaign’s effect can be analyzed by measuring consumers’ mean WTP before and after the campaign. To perform statistical tests related to campaign effectiveness, consumer surveys conducted before and after the campaign’s first season were pooled. In addition to the intercept, two dummy variables were included in the models. The first is used to differentiate the pre-campaign and post-campaign data (= 1 if post-campaign, 0 otherwise). The second dummy variable is used to distinguish customers who indicated awareness of the SC agricultural branding campaign (= 1 if aware, 0 otherwise).

Results of the WTP model assuming a normal distribution are reported in table 2.⁵ Two models are presented for both produce and animal products. Model 1 includes the intercept and the post-campaign dummy variable. This dummy variable assesses the change in the population mean WTP as a result of the promotion campaign.⁶ Model 2 includes the post-campaign dummy as well as the “awareness of campaign” dummy. Model 2 was estimated to isolate the change in mean WTP as a result of the state campaign from other effects that might influence consumer preferences for locally grown products (e.g., national media).

Results from model 1 for produce reveal that mean WTP increased after the SC promotion campaign. As shown by the intercept, mean WTP prior to the campaign was 27.5%, which is the premium consumers were willing to pay for produce identified as “SC-grown.” This estimate is comparable to the findings of previous studies that measured consumer WTP for locally grown food. For example, Loureiro and Hine (2002) found Colorado consumers were willing to pay a 5% premium for locally grown potatoes. More recent studies describe WTP values of 9% to 20% for local specialty food products in northern New England (Giraud, Bond, and Bond, 2005), and report that Ohio consumers are willing to pay premiums of about 20% to 40% for locally grown strawberries (Darby et al., 2008). While our baseline WTP estimates are comparable to those reported in previous studies, our main interest is the change in WTP values before and after the promotion campaign.

The coefficient on the post-campaign dummy variable indicates mean WTP rose by approximately 3.4% after the campaign. Results from model 2 indicate most of the increase in consumer preference for SC-grown produce is due to the SC branding campaign. Specifically, impact shifts from the post-campaign dummy variable to the awareness dummy variable, showing that only individuals aware of the campaign expressed a change in preferences. Mean WTP of consumers aware of the campaign (30% of respondents) increased by 7.1%.

⁵ We also estimated models assuming lognormal distribution. The results were very similar and are not presented here.

⁶ Details on factors that affect consumer WTP for SC-grown products as well as its implications for targeting the promotion campaign in South Carolina are available in Carpio and Isengildina-Massa (2009).

Table 2. Estimation Results of the WTP Model for SC-Grown Products

Variable	Fruits and Vegetables		Animal Products	
	Model 1	Model 2	Model 1	Model 2
Intercept	0.275*** (0.013)	0.274*** (0.013)	0.236*** (0.013)	0.236*** (0.013)
Post-campaign (Yes = 1, No = 0)	0.034** (0.018)	0.013 (0.020)	-0.004 (0.017)	-0.016 (0.019)
Aware of the SC branding campaign (Yes = 1, No = 0)		0.071*** (0.029)		0.044** (0.026)
σ	0.211*** (0.009)	0.210*** (0.009)	0.190*** (0.008)	0.189*** (0.008)
Log-likelihood statistic	-704.630	-701.637	-658.692	-657.313
Sample size	817		728	

Notes: Double and triple asterisks (**, ***) denote statistical significance at the $\alpha = 0.05$ and 0.01 levels, respectively. Values in parentheses are asymptotic standard errors. Estimation results assume a normal probability density function.

For animal products, model 1 results reveal the change in the population mean WTP to pay after the campaign is not statistically different from 0. However, results from model 2 show mean WTP increased by 4.4% among consumers aware of the campaign relative to consumers not aware of the campaign. These somewhat contradictory findings can be explained by the fact that the post-campaign dummy variable measures the effect across all consumers whereas the “awareness” dummy isolates the effect for a specific group of consumers who were aware of the campaign.

The results of the WTP analysis provide evidence of change in consumer preferences for SC-grown products. The higher effect on produce than on animal products is likely explained by the focus on fruits and vegetables in the first season of the locally grown campaign. These results were robust to the inclusion of other explanatory variables such as socioeconomic characteristics of individuals surveyed.

It is important to point out that the WTP measures do not reflect actual price differentials between SC-grown and out-of-state products observed in the market. Actual price differentials are determined by supply and demand for these products and may be observed through prices and quantities of products consumed in the market. Until these data become available, the change in the WTP measures can be used as a tool to measure shift in demand for regionally promoted products.⁷

Assessment of the Potential Economic Impact of SC Locally Grown Campaign

Two types of demand shifts are analyzed using the EDM for the SC agricultural market. The first is the current demand shift due to the effect of the campaign, 3.4% for fruits and vegetables and 0% for animal products (table 3). These values represent change in mean WTP and can be used to calculate exogenous shock due to advertising γ using the equation

⁷ Some authors argue that hypothetical WTP measures tend to overestimate real WTP values (e.g., Whitehead and Cherry, 2007). However, note that the focus in this study is on the change in WTP values (pre- and post-campaign) rather than actual values. An implicit assumption of our analysis is that the size and direction of the bias (if any) do not change and are unaffected by the campaign.

Table 3. Price, Quantity, and Producer Surplus (PS) Changes (Δ) Due to the SC Regional Promotion Campaign

Variable	After First Season ^a		Estimated Potential ^b
	Fixed Supply ^c	Elastic Supply ^d	Elastic Supply
Fruits and Vegetables:	$\gamma = 0.062$	$\gamma = 0.062$	$\gamma = 0.129$
$\% \Delta D_A^l$	0.0000	2.9373	6.1338
$\% \Delta D_A^m$	-0.5728	-0.9433	-1.9698
$\% \Delta S_A^m$	0.0000	-0.2571	-0.5369
$\% \Delta D_B^m$	0.0017	0.0012	0.0025
$\% \Delta S_B^m$	0.0000	-0.0015	-0.0032
$\% \Delta P_L$	3.3989	1.7731	3.7027
$\% \Delta P_M$	-0.0022	-0.0015	-0.0032
ΔPS (mil. \$)	3.0922	1.6368	3.4719
	[0.4588, 6.3156] ^e	[0.1878, 4.0171]	[0.5896, 7.7391]
Animal Products:	$\gamma = 0.000$	$\gamma = 0.000$	$\gamma = 0.089$
$\% \Delta D_A^l$	0.0000	0.0000	3.4059
$\% \Delta D_A^m$	0.0000	0.0000	-4.7784
$\% \Delta S_A^m$	0.0000	0.0000	-0.9296
$\% \Delta D_B^m$	0.0000	0.0000	0.0106
$\% \Delta S_B^m$	0.0000	0.0000	-0.0126
$\% \Delta P_L$	0.0000	0.0000	2.6953
$\% \Delta P_M$	0.0000	0.0000	-0.0144
ΔPS (mil. \$)	0.0000	0.0000	18.4460
			[1.9100, 45.5150]

Note: All calculations are based on 2006 average prices and quantities.

^aThe change in demand due to the campaign after the first season was assumed to be 3.4% for fruits and vegetables and 0% for animal products.

^bThe estimated potential change in demand due to the campaign was assumed to be 7.1% for fruits and vegetables and 4.4% for animal products.

^cThe “fixed supply” scenario corresponds to a perfectly inelastic supply curve where producers cannot react to the increase in demand by increasing the quantity supplied.

^dIn the “elastic supply” scenario, both quantity and price adjust to the shift in the demand curve.

^eEstimates in square brackets represent the lower and upper bounds for 95% confidence intervals.

$\gamma = \Delta WTP \varepsilon_A^l$. For example, in the case of fruits and vegetables, the 3.4% vertical shift in demand corresponds to $\gamma = 0.062$ since $\Delta WTP = 0.034$ and $\varepsilon_A^l = -1.81$ (tables 1 and 2).

The second shift in demand is the potential shift that would have occurred if all consumers were aware of the campaign. We use the effect of the “awareness” dummy variables shown in table 3 (7.1% for produce and 4.4% for animal products) for all consumers. In addition, two scenarios are considered. The first is a short-run scenario labeled “fixed supply” in table 3. This scenario analyzes the advertising effect in a very short run (fixed supply), when producers cannot react to an increase in demand by increasing quantity supplied. Therefore, an increase in producer surplus is due only to the price change. The second scenario corresponds to the case

where both quantity and price adjust to the demand curve shift (“elastic supply,” using elasticities specified in table 1).

Table 3 shows the estimated changes in prices and quantities associated with the SC branding campaign. Changes in quantities and prices are calculated using equation (9). All results are consistent with expectations. After the first season, assuming a fixed supply, shift in demand due to the promotion campaign raises the price of SC-grown produce by 3.4%. When the supply is allowed to adjust to changes in demand, the price of SC-grown produce increases by 1.77% and quantity demanded increases by 2.94%. In both cases, the increase in the quantity demanded for locally grown products comes at the expense of mass-marketed products. No measurable impact is detected in the animal products market after the first season of the locally grown campaign.

Changes in SC producer surplus due to the SC branding campaign can be used to measure the effects of the campaign on SC producers’ welfare (table 3).⁸ Results show that if consumers are able to identify SC-grown produce, the campaign’s first season will increase producer surplus by \$3.09 million in the short run. This increase in producer surplus reflects the effect on producer revenues of an estimated 3.40% price increase for locally grown fruits and vegetables due to the promotion campaign, while keeping production unchanged (i.e., the short run assumes fixed supply).

As producers adjust their production (i.e., elastic supply), the campaign will likely result in a 2.94% increase in production and a 1.77% increase in the price of SC-grown products, yielding a total increase in producer surplus of \$1.64 million. This conclusion is based on the assumption that consumer preferences will remain at the level measured in the fall of 2007. However, this preference level reflects only about a 30% rate of campaign awareness. Our estimates indicate a total increase in producer surplus of approximately \$22 million dollars if the campaign is able to reach all consumers over the long run. This estimate is based on an increase in demand for produce by 7.1% and for animal products by 4.4% (as measured for individuals aware of the campaign). This demand increase will result in a 6.13% increase in production and a 3.70% increase in price for SC-grown produce, yielding a producer surplus of \$3.47 million, and for SC animal products, a 3.41% increase in production and a 2.69% increase in price, yielding a producer surplus of \$18.44 million. These estimates only reflect changing consumer preferences if results from the campaign’s first season remain constant in the future. As the campaign continues to affect consumer preferences in coming years, these estimates can be revised to reflect further changes in consumer demand.

Sensitivity Analysis

We evaluated the robustness of the estimated producer surplus and benefit-cost ratio with respect to market parameter uncertainty using the stochastic approach proposed by Davis and Espinoza (1998) and Zhao et al. (2000). The first step involved specifying subjective probability distributions from econometric studies and the investigators’ judgment. In the second step, the distributions of the resulting surplus changes or benefit-cost ratios were obtained through a Monte Carlo simulation. Finally, the restriction that locally grown and mass-marketed products be substitutes in demand and supply was imposed by discarding the draws that did not satisfy this condition (Piggott, 2003).

⁸ The formula used to calculate change in producer surplus (ΔPS) is $\Delta PS = \Delta P Q_0 + 0.5 \Delta P \Delta Q$, where ΔP and ΔQ are changes in price and quantity, and Q_0 is the initial quantity demanded.

The simulation used one million sets of parameter values, but after discarding the observations that did not satisfy the substitutability restriction, about 400,000 sets remained for generating the distributions for surplus changes and the benefit-cost ratio. For the subjective probability distributions, seven parameters were assumed random: the elasticity parameters ϵ , β , ϑ , τ , α_l , ρ_l , and the change in WTP (ΔWTP). All other elasticity values needed, as well as the shock γ , are functions of these seven underlying parameters.

Following Zhao et al. (2000), we used independent truncated normal distribution for each parameter in the base simulation. This distribution allows imposing the sign on the parameters: negative for the own-price elasticity of demand (ϵ) and the elasticity of transformation (τ), and positive for all other parameters. Base distributions were set with the baseline parameter values shown in table 1 as the means (μ).⁹ Standard deviations (σ) were specified using the coefficient of variation (CV), i.e., $\sigma = CV \mu$. Of the seven parameters considered, only ΔWTP has a known standard deviation. For example, the standard deviation for the ΔWTP of 0.034 (3.4% increase in mean WTP for SC fruits and vegetables) is 0.018, or 53% CV. Given the very limited empirical studies on all other parameters, we used a 100% CV for the base specifications. This value is higher than the 50% CV used by Zhao et al. (2000) in similar circumstances and provides for a sensitivity analysis across a wider range of variation in market parameters.

Table 3 displays the 95% confidence intervals generated using the simulated distributions. The intervals show that all surplus measures are statistically different from 0, since the constructed confidence intervals do not include 0. The resulting 95% confidence interval for the benefit-cost ratio has a lower bound of 0.92 and an upper bound of 12.63; the best estimate of this benefit-cost ratio is 6.18. The precision with which the benefits are measured indicates we can be 97% certain that the benefit-cost ratio is greater than 1. These results were robust to different assumptions regarding the unknown CV values as well as the substitutability restriction.

Conclusions and Policy Implications

This study has developed and applied a novel approach, combining contingent valuation methods and a partial displacement equilibrium modeling framework, to provide an ex ante assessment of a regional promotion campaign. An equilibrium displacement model was used to analyze the effect of a regional promotion campaign on prices and quantities of labeled and mass-marketed products in the campaign region. It was demonstrated that the potential impact of the campaign can be measured using information on the pre-campaign quantities and prices, demand and supply elasticities for the promoted products, and an estimate of the shift in demand for branded products resulting from the promotion campaign. Thus, the only unknown at the initial stages of campaign implementation is shift in consumer demand. We propose using contingent valuation techniques to measure the shift in demand as a result of promotion.

The approach developed in this study was applied to the estimation of potential impact of the South Carolina (SC) locally grown campaign, initiated in May 2007. The data for this study were collected via telephone surveys in March 2007 (two months prior to the launch of

⁹ Normal distributions are specified by the mean μ and the standard deviation σ . In truncated normal distributions, the mean and the standard deviation are no longer equal to μ and σ . However, since the truncation is far out in the right or left tail, the differences are very small. Thus, for convenience, we still refer to μ and σ as the mean and standard deviation, respectively (see also Zhao et al., 2000).

the campaign) and in September 2007 (immediately after its first summer season). Contingent valuation surveys provided data regarding consumer willingness to pay (WTP) for local versus out-of-state produce and animal products. The results of the WTP analysis prior to the campaign and after its first summer season provide evidence of changing consumer preferences for SC-grown products. Specifically, consumers aware of the campaign are willing to pay 7.1% and 4.4% higher premiums for produce and animal products. At the aggregate level, mean WTP for produce increased by 3.4% after the first campaign season. Change in consumer preferences and the corresponding shift in demand curves are estimated to have increased producer surplus by \$3.09 million.

Since estimated changes in producer surplus represent potential benefits to producers, they can be used to calculate the return on investment for the SC campaign. The \$3.09 million change in producer surplus (the short-run effect after the first season of the campaign) and the \$500,000 total investment in the campaign in 2007 resulted in a return on investment of 618%, or a benefit-cost ratio of 6.18. This figure is lower than that found by Govindasamy et al. (2003), who calculated that for every dollar invested in the Jersey Fresh program, the campaign returned about \$32 for local fruit and vegetable growers (a return on investment of 3,200%). Our finding can also be compared to results from 11 previous studies on commodity promotion programs, summarized by Kaiser et al. (2005, p. 410). The lowest benefit-cost ratio of these program studies was 1 (Goddard and Amuah, 1989), the highest was 30.9 (Van Sickle and Evans, 2001), and the average was 10.66. Thus, our estimate of the impact of the SC locally grown campaign in the short run is within the impact range reported in other studies.

Over the long run, our estimates indicate a total potential increase in producer surplus of about \$22 million dollars if the campaign is able to reach all consumers. Depending on the annual campaign expenditures, this figure may result in a higher return on investment in the long run. Furthermore, the analysis in this study concentrates on direct benefits from the promotion campaign received by farmers. This positive impact in the SC farming sector is likely to have an indirect impact on the rest of the economy as well. A previous study assessing the potential impact of the SC branding campaign on the SC economy (Carpio, Isengildina, and Hughes, 2007) found that a \$1 million increase in the surplus of fruit and vegetable producers has an additional indirect impact of \$1.52 million throughout the state economy, due to the multiplier effect.

The framework proposed here can be used to evaluate the potential impact of a regional promotion campaign in the early stages of campaign development. The results of this analysis could help policy makers assess the costs and potential benefits of a promotional campaign to ensure a more efficient allocation of taxpayer funds.

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Appendix:

Contingent Valuation Questions Used in the Consumer Survey

If you were buying vegetables or fruit from the market, and you could choose *at equal prices* between produce grown in South Carolina and out-of-state produce, which one would you choose? [categorize based on response]

- Produce grown in SC 1
- Out-of-state produce 2

If the person takes more than a few seconds to respond, ask: Are you . . .

- Not sure? 3
- Makes no difference? 4
- Don't know? 5

If produce marked as grown in SC was the respondent's first choice, then ask: Okay, what if the price of SC-grown produce was [5%, 10%, 20%, 30%, 50%] more expensive than out-of-state produce. Which one would you choose?

- Produce marked as grown in SC 1
- Out-of-state produce 2

If the person takes more than a few seconds to respond, ask: Are you . . .

- Not sure? 3
- Makes no difference? 4
- Don't know? 5

APPENDIX C

PRESENTATIONS:

Carpio, C.E., and M. Herrera “A Picture of the Local Foods Consumer”
SC RAIN conference

Carpio, C.E., and Isengildina, O. “Measuring the Potential Economic Impact of a
Regional Agricultural Promotion Campaign: The Case of South Carolina.”
SAEA 2009 Annual Meetings, Atlanta, Georgia, February 2009.

Carpio, C.E., Isengildina-Massa, O., and D. Hughes. “The Economic Impact of State
Agricultural Branding Campaigns: the Case of South Carolina.”
2011 AAEE & NAREA Joint Annual Meeting,
Pittsburgh, Pennsylvania, July 24-26, 2011.

A Picture of the Local Foods Consumer

Carlos E. Carpio
Melanie Herrera

Clemson University

Partial funding for this study has been provided by Federal-State Marketing Improvement Program of the USDA

Introduction

Local Food:

- U.S. Congress 2008: a product can be considered a "local or regional product" if transported *less than 400 miles from its origin, or within the State in which it is produced...*
- Research has shown that state boundaries may serve as natural point of geographic delineation for "local" production in the minds of consumers

Facts about Locally Grown Food

- Increase in consumer interest for locally produced foods:
 - Farmers markets increased from 2,410 in 1996 to 5,274 in 2009.
 - Several grocery chains are also supporting this trend Whole Foods, Ingles.

- Increased participation of State Departments of Agriculture in Locally Grown promotion:

- Number of States conducting such programs went up from 23 to 50 between 1995 and 2010.
- Capture attention of nation media: 2007 Times article labeled **"local...the new ideal that promises healthier bodies and healthier planet"**.

Megatrends affecting demand for local foods

- Environmental movement
- Community food security movement
- Challenges to dominance of large corporations
- Slow food movement

Picture of local food consumers and potential consumers

Why is this important?

- It is easier to give people what they need when you know what they want... (consumer preferences)
- Helps to select the best marketing and branding strategies
- Increase profitability \$\$\$

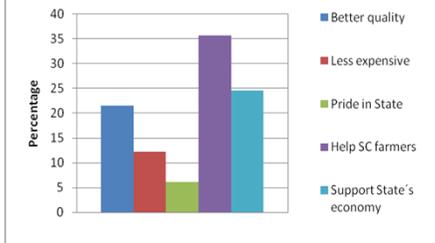
Local Foods Consumer Profile: National level

- Demographically diverse but similar in their motivations to buy local foods
- Demographically diverse:
 - Effects of income, education, gender, age, etc., are not consistent across studies
 - Differences in access and relative prices across regions might lead to differences in profiles...

Local Foods Consumer Profile: National level

- Motivations to buy local foods:
 - Freshness
 - Support the local economy
 - Knowing the source of the product

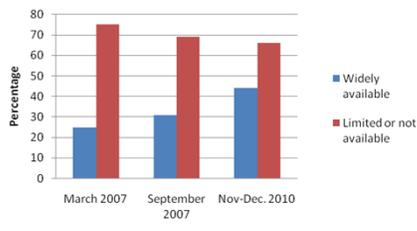
Motivations to buy SC local



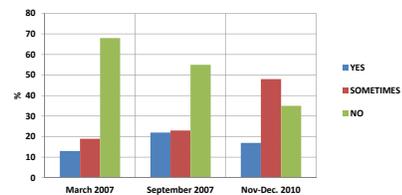
Why some don't buy local...

- Barriers
 - Lack of availability
 - Seasonal constraints
 - Limited access: too far to drive, not available in stores
 - Lack of knowledge (awareness)
 - Difficult to identify

Availability of SC grown and others in Grocery Stores



When shopping can you tell which products are from SC?



Potential consumers and willingness to pay (WTP)

- If products are not available or consumer cannot identify, interesting to ask consumers hypothetical questions about choices
- Answers to questions can be used to calculate consumers WTP for products which is a measure of potential demand

Potential consumers and willingness to pay

1. If you were buying vegetables or fruit from the market, and you could choose *at equal prices* between produce grown in South Carolina and out-of-state produce, which one would you choose? [Categorize based on response]

Produce grown in SC	[if chosen go to a]	1
Out-of-state produce		2

a. [If produce marked as grown in SC was the respondent's first choice then ask] Okay, what if the price of SC grown produce was [5%, 10%, 20%, 30%, 50%] more expensive than out of state products, which one would you choose?

Produce marked as grown in SC		1
Out-of-state produce		2



Factors affecting WTP: National level

- Demographic factors not consistent across studies
- Regarding motivations, consumers with higher WTP place higher importance on:
 - Quality
 - Nutrition
 - Helping farmers in their State
 - Environment

Factors affecting WTP: South Carolina

- Females, older consumers, people that work in agriculture, people that visit Farmers' Markets, wealthier households have higher WTP values
- No differences across regions (Upstate, Midland and Coastal regions)

Factors affecting WTP: South Carolina

- Motivations: consumers with higher WTP place higher importance on
 - Quality
 - Support SC or SC farmer

Restaurants and retailers can also be seen as customers:

- Reasons restaurants buy local food:
 - Perceived superior quality and freshness
 - Meet customer requests
 - Access unique products
 - Support local businesses
 - Differentiating from the competition

Conclusions

- Awareness and support for local food is growing
- SC local is preferred over out-of-state (willing to pay premium)
- Local grocery stores and restaurants supporting local foods
- Main motivation to buy: Quality and Support SC Farmers

THANK YOU!!

Nothing's Fresher, Nothing's Finer: The Certified South Carolina Grown Program

Carlos E. Carpio
Olga Isengildina-Massa
David Hughes

Clemson University

Partial funding for this study has been provided by Federal-State Marketing Improvement Program of the USDA

The Big Picture

- Regional promotion campaigns play important role in agricultural and food policy around the world:
 - EU legislation:
 - Enable producers to legally protect regional products
 - Provides guidelines for State aid for promoting regional products
 - U.S.
 - Prior to 2000 less than half the states had regional promotion programs
 - Currently every state in the country has a state-sponsored program (Bernard, 2010)

SC Ag. Marketing Campaign

- Launched on May 22, 2007
- Funding from State Senate Appropriations
- Multi-step, multi-component campaign:
 - Engaging farmers, processors and distributors
 - Logo: "Nothing's Fresher, Nothing's Finer"



SC Ag. Marketing Campaign

Campaign objectives

... Our goal is for consumers to be able to easily identify, find and buy South Carolina products.. keep agriculture profitable....

SC Ag. Marketing Campaign Components

Campaign component	Description
Certification Program	-Producers, processors and distributors apply for membership -Authorization to use campaign logos and materials on first grade quality products
SC Grown retail program	
Grocery stores	-Point of Purchase (POP) kits -Used by Walmart, Bi-Lo, Food Lion, 535 stores in 2008
Roadside and farmers' markets	-POP kits, banners, artwork for logos
Fresh on the menu (FOTM)	-POP kits and artwork for logos, outdoor and magazine advertisement -25% of menu items with local products (when they are available) -55 restaurants in 2008, 300 in 2010
Multimedia	-TV, Radio, Magazine, Newspaper, and Billboard Ads.



Is the campaign working?

-Clemson has worked on campaign evaluation since 2007:

- Collected baseline information before campaign
- Follow up surveys
- Focus on consumers, restaurants, and Farmers' Markets

Consumers

- Pre-campaign survey in May 2007 (n=500)
- Post-campaign surveys:
 - September 2007 (n=500)
 - November-December 2010 (n=160)
- Surveys focus on measuring awareness, perceptions and willingness to pay for SC grown products and campaign

Consumer Awareness

Are you aware of the “Nothing’s Fresher, Nothing’s Finer Campaign”?

Survey Period	Awareness (%)
March 2007	~29
September 2007	~29
Nov-Dec 2010	~30

Availability of products

Are SC products widely available at your regular grocery stores?

Survey Period	Widely available (%)	Limited or not available (%)
March 2007	~25	~75
September 2007	~30	~70
Nov-Dec 2010	~45	~55

Identifiability of products

When shopping can you tell which products are from SC?

Survey Period	YES (%)	SOMETIMES (%)	NO (%)
March 2007	~15	~20	~65
September 2007	~20	~25	~55
Nov-Dec 2010	~15	~45	~40

Willingness to Pay for SC Grown Products

Consumer Choice of “State-Grown” Produce Relative to Out-of-State Products

Premiums	Mar-07 (%)	Sep-07 (%)
0%	~95	~95
5%	~80	~85
10%	~65	~70
20%	~55	~50
30%	~45	~50
50%	~30	~40

Willingness to Pay for Campaign

If program were placed on the next ballot, would you vote for the program if a special tax needed to fund it cost your household ____ per year?

Response	%
Yes	52
No	48

Fresh on the Menu

- Surveyed restaurants participating in program (14% response rate, n=42), 2010
- On average, 40% menu items marketed as prepared from locally grown products
- 91% family owned
- 76% had annual sales of \$250,000 or more
- 74% satisfied or very satisfied with campaign

Fresh on the Menu

Perceived changes due to FOTM Campaign

Metric	Average
Costs of ingredients and food preparation	+10%
Total sales	+17%
Number of clients	+14%
Profitability	+13%

Farmers' Markets

- Surveyed 80 vendors (50% campaign members), 2010
- On average, 50% of products marketed as SC locally grown
- Average farm size 27 acres
- 76% satisfied with campaign

Farmers' Markets Participants

Perceived changes due to SC Ag. Campaign

Metric	Members	Non-members
Total sales	+12%	+9%
Prices	+5%	+6%
Quantity sold at Farmers' Market	+10%	+8%
Total production of Ag. products	+7%	+6%
Profits	+10%	+8%

Summary

- There is some evidence of change in consumers' preferences for SC grown products as a result of the campaign
- Consumers find easier to locate and buy SC grown products
- Both restaurants and farmers markets participants perceive campaign as beneficial for their businesses

The Economic Impact of State Agricultural Branding Campaigns: The Case of South Carolina*

Carlos E. Carpio
Olga Isengildina-Massa
David Hughes



Clemson University

*Support for this research was provided by a grant from the AMS-USDA Federal/State Marketing Improvement Program (FSMIP)

The Big Picture

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 - EU legislation:
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SC Ag. Marketing Campaign

Campaign objectives

... Our goal is for consumers to be able to easily identify, find and buy South Carolina products.. keep agriculture profitable...

Standards

U.S. #1 Quality Grade Standards or higher U.S. Grade Standards.

SC Ag. Marketing Campaign Components

Campaign component	Description	Other
SC Grown retail program		
Grocery stores	Point of Purchase (POP) kits	Used by Walmart, Bi-Lo, Food Lion, 535 stores in 2008
Roadside and farmers’ markets	POP kits, banners, artwork for logos	
Fresh on the menu (FOTM)	POP kits and artwork for logos, outdoor and magazine advertisement	25% of menu items with local products: 55 restaurants in 2008, 300 in 2010
Multimedia	TC, Radio, Magazine, Newspaper, and Billboard Ads.	
Trade shows	State and National	
Creative design	Creative and production support of other elements	



**Ask for South Carolina.
Nothing's Fresher.
Nothing's Finer.**

Farming: South Carolina's Growth Industry

*Locally grown.
It's to dine for.*

Fresh on the Menu

Is the Campaign Working?

*What is the Economic Impact of the Campaign?

- Producer surplus
- Compensating welfare measure for consumers

Clemson work

-Clemson team has worked on campaign evaluation since 2007

-Conducted baseline and follow-up consumer surveys in order to:

- Evaluate campaign potential
- Evaluate campaign effectiveness
- Measure potential economic impact: no market level data available at initial campaign stages

Summary of framework used to measure Economic Impact

- 1) Equilibrium Displacement Model
- 2) Obtain elasticities and shares from previous studies or calculate values
- 3) Use contingent valuation (i.e., WTP for locally grown products obtained from consumer surveys) to estimate shift in demand

Equilibrium Displacement Model

Multi equation market equilibrium model for two regions: Region A and rest of the country

Region A

Market for mass quality products

Region B

Market for mass quality products

Conceptual Framework

Multi equation market equilibrium model for two regions: Region A and rest of the country

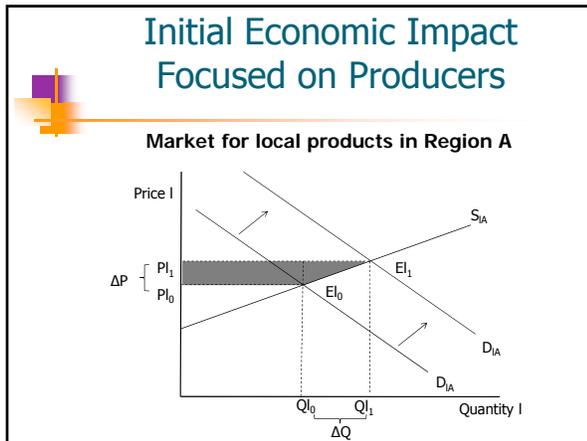
Region A

- Demand
 - $D_A^l = D_A^l(P_l, P_m, c_l)$ Demand for locally grown branded products
 - $D_A^m = D_A^m(P_l, P_m, c_l)$ Demand for mass-quality products
- Supply
 - $S_A^l = S_A^l(P_l, P_m)$ Supply of locally grown branded products
 - $S_A^m = S_A^m(P_l, P_m)$ Supply of mass-quality products

Equilibrium Displacement Model

Rest of the country

- Demand
 - $D_B^m = D_B^m(P_m)$ Region's B demand for mass quality products
- Supply
 - $S_B^m = S_B^m(P_m)$ Region's B supply of mass quality products
- Market clearing conditions
 - $D_A^l = S_A^l$ Locally grown branded products market clearing
 - $D_A^m + D_B^m = S_A^m + S_B^m$ Mass quality products market clearing



- ### Shift in demand due to campaign
- WTP can be used to construct inverse demand curves
 - If elicitation is done before and after campaign: $\Delta WTP = \text{advertising effect} = \text{vertical shift in the demand}$
 - The Contingent Valuation (CV) framework was used to elicit SC consumer preferences
 - Product attribute of interest: "SC grown"
 - Telephone surveys of random samples of 500 SC consumers conducted by Richard Quinn Associates on March and September, 2007

Change in Quantity Demanded (D), Producer Surplus (PS) and Price (P)

Variable	After first season		Estimated potential
	Fixed supply	Elastic supply	Elastic supply
	$\gamma = -0.062$		$\gamma = -0.129$
$\% \Delta D_A^I$	0.0000	2.9373	6.1338
$\% \Delta D_A^M$	-0.5728	-0.9433	-1.9698
Fruits and Vegetables $\% \Delta S_A^M$	0.0000	-0.2571	-0.5369
$\% \Delta D_B^M$	0.0017	0.0012	0.0025
$\% \Delta S_B^M$	0.0000	-0.0015	-0.0032
$\% \Delta P_L$	3.3989	1.7731	3.7027
$\% \Delta P_M$	-0.0022	-0.0015	-0.0032
ΔPS	3.0922	1.6368	3.4719
(Million \$)	(0.4588, 6.3156)	(0.1878, 4.0171)	(0.5896, 7.7391)

Change in Quantity Demanded (D), Producer Surplus (PS) and Price (P)

Variable	After first season		Estimated potential
	Fixed supply	Elastic supply	Elastic supply
	$\gamma = -0.000$		$\gamma = -0.089$
$\% \Delta D_A^I$	0.0000	0.0000	3.4059
$\% \Delta D_A^M$	0.0000	0.0000	-4.7784
Animal Products $\% \Delta S_A^M$	0.0000	0.0000	-0.9296
$\% \Delta D_B^M$	0.0000	0.0000	0.0106
$\% \Delta S_B^M$	0.0000	0.0000	-0.0126
$\% \Delta P_L$	0.0000	0.0000	2.6953
$\% \Delta P_M$	0.0000	0.0000	-0.0144
ΔPS	0.0000	0.0000	18.4460
(Million \$)			(1.9100, 45.5150)

- ### Benefit/Cost Ratio
- \$3.1 million change in *producer surplus*
 - \$500,000 spent in campaign during first season
 - Benefit/cost ratio: 6.2
 - Commodity promotion programs average benefit/cost ratio: 10 (min 1 – max 30)

- ### Limitations of EDM/CV approach
- 1) Focused only on producer surplus:
 - What about consumers? After all they are paying for the campaign....
 - 2) Uses consumer level data to analyze effect on producers
 - 3) Measures "potential impact" rather than actual (perceived ?) impact on producers

Economic Impact of Campaign on Consumers

- Paucity of empirical studies quantifying the welfare effects of advertising on consumers
- Lack of consensus about the nature of advertising: informative, persuasive or complementary
- Complementary and informative view can be used to justify use of CV methods to estimate economic impact of campaign on consumers

Economic Impact of Campaign on Consumers

- Telephone and mail survey of random samples of 400 SC consumers conducted in 2010-2011
- Valuation question asks respondent if they would vote to support the campaign given:
 - Specified program cost in terms of tax

Valuation question

If the Nothing's Fresher, Nothing's Finer program were placed on the next ballot, would you vote for the program if the **new special tax** needed to fund the program cost your household **\$5** per year ?

- Yes
 No

- Randomly assigned bid amounts (\$): 1, 5,10, 30,50, 100,200
- Follow up question based on answer to first question

Description and Summary Statistics of Key Survey Variables

Variable Name	Category	Category Proportion	Mean	Standard Deviation
Age			56.02	14.74
Income			53.19	34.08
Gender	1=Female	38	0.38	0.50
	0=Male	62		
Number of members in the household			2.49	1.29
Working in agriculture	1=yes	11	0.11	0.31
	0=no	89		
Motivations to buy SC products	0=quality or price	27	0.28	0.45
	1=support SC or SC farmers	73		
Perception about quality of SC products	Better	35	0.35	0.48
	Same or Worse	65		
Aware of the campaign	1=yes	37	0.37	0.48
	0=no	63		
Support the campaign	1=yes	82	0.82	0.39
	0=no	18		

Responses to dichotomous questions (n=292)

First Discrete Choice Question	Yes	No		
Percentage of Respondents (%)	49	51		
Average Bid (\$)	22	36		
Second Discrete Choice Question	Yes	No	Yes	No
Percentage of Respondents (%)	54	46	28	72
Average Bid (\$)	33	90	25	25

Preliminary WTP estimates

- Non-parametric lower bound of mean WTP:
 - \$30/household
 - \$51 million aggregate benefits for SC consumers
- Non-parametric median WTP:
 - \$5-\$10/household

Producers' perceived effect of campaign

- Surveyed 80 Farmers Markets' vendors (50% are campaign members) in 2010
- On average, 40% of products marketed as SC locally grown
- Average farm size 27 acres
- 76% very satisfied with campaign

Producers' perceived effect of campaign

Metric	Members	Non-members
Total sales	+12%	+9%
Prices	+5%	+6%
Quantity sold at Farmers' Market	+10%	+8%
Total production of Ag. products	+7%	+6%
Profits	+10%	+8%

Summary and Conclusions

- Developed and applied novel approach combining CV methods and a partial EDM to provide assessment of a regional promotion campaigns (at initial stages) on producers.
- Developed approach to assess economic impact of campaign on consumers.

Summary and Conclusions

- Ex-ante and perceived positive effect of campaign on producers.
- Positive effect of campaign on consumers.

Thank you